24th ACM International Conference on Multimodal Interaction

ICMI

7–11 November 2022 | Bengaluru, India

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Instructions and General Information

Physical Attendance:
- Registration Desk is on the Ground Floor and will open at 8am.
- Breakfast and lunch will be served at the PFA area.
- Ballroom 1 will host the sponsors along with the in-person posters and demos.
- The main conference on 8th, 9th, and 10th will be conducted at BallRoom 2. Banquet is also planned here on 9th.
- Ballroom 3 will be used for Workshops/ Tutorials/ Doctoral Consortium.
- Meeting Room 3 on the first floor will be used for specific workshops on the 7th and 11th.

Floor Maps:
Grand Ballroom Layout
Meeting Room 3 (1st Floor, Tower Block)

Meeting Room 1 (1st Floor, Podium Block)
WELCOME NOTE

ICMI 2022 Chairs’ Welcome

It is our great pleasure to welcome you to the 24th ACM International Conference on Multimodal Interaction – ICMI 2022, held in Bengaluru, India. ICMI is the premier international forum for multidisciplinary research on multimodal human-human and human-computer interaction, interfaces, and system development. The conference focuses on theoretical and empirical foundations, component technologies, and combined multimodal processing techniques that define the field of multimodal interaction analysis, interface design, and system development. ICMI 2022 featured a single-track main conference which included keynote speakers, technical full and short papers (including oral and poster presentations), special sessions, late breaking papers, a grand challenge, demonstrations, and doctoral spotlight papers. Two days were devoted to six satellite workshops and a special tutorial on Open-Task Multimodal Conversational Assistants, open to all participants of the conference.

The conference theme for ICMI 2022 was selected as “Intelligent and responsible Embodied Conversational Agents (ECAs) in the multilingual real world”. Embodied Conversational Agents (ECAs) enable natural Human Computer Interaction, inspired by human-human communication. With rapid advances in multimodal analysis, dialog and synthesis technologies, intelligent ECAs are set to enter real world applications. The expected intelligence includes cognitive, social and emotional facets that humans routinely display in conversations. The theme for ICMI 2022 revolved around making the ECAs more robust, responsible and multilingual, and the special invited tutorial of the conference also reflected the focus on this topic.

We have received 24 submissions on human communication dynamics, 19 on embodied interaction, and 10 on dialogue modeling. The call for papers attracted submissions from the Americas, Asia, Australia, Europe, and Africa. A Senior Program Committee supervised the review process together with the Program Chairs, and an extensive Program Committee helped with the
reviewing. Each paper in the main track was reviewed by at least three reviewers from the Program Committee. The authors had the opportunity to submit a rebuttal, and the Senior Program Committee members initiated discussions following the rebuttals to finalize their recommendations. For papers that were accepted in principle, but required substantial clarifications, a shepherding process was initiated in which a volunteer Senior Program Committee member guided the authors to ensure that the final version met reviewers’ concerns and was acceptable. Eight papers were guided by such shepherds, invited for this task by the Program Chairs. The reviewing of the late breaking papers, doctoral consortium submissions, Blue Sky papers and demonstrations were performed by different committees.

The final program statistics are as follows: 201 papers were reviewed for the Main track, of which 66 papers (33% acceptance rate) were accepted. 30 of these papers were presented as oral presentations (15% oral acceptance rate). For the Late Breaking Papers track, 7 papers (27%) were accepted from 26 submissions, and presented as posters. The Doctoral Consortium track accepted 11 out of 12 submissions, and the Demonstrations track 2 out of 4 submissions. However, this track was enriched by papers recommended for demo presentations by the program committee. Several authors were invited to do a demo, but without an additional demo paper. This year’s conference also continued the Blue Sky Papers track, including papers selected for their innovative vision and potential of opening new research directions for the ICMI community. Three papers (30%) were selected from 10 submissions by a special committee, and also were awarded prizes, sponsored by CCC Computing Community Consortium.

ICMI 2022 featured several valuable and insightful keynote and invited talk presentations, for guiding the community to a better understanding of the future. One of these talks is given by Prof. Daniel Gatica-Perez (Idiap Research Institute), who received the ICMI Sustained Accomplishment Award 2022. His invited talk was entitled “Focus on People: Five Questions from Human-Centered Computing”, and he shared his personal experiences and views on how audio-visual and ubiquitous research on social interaction has evolved over the past two decades. The three keynote talks of the conference are:
Putting together ICMI 2022 was a team effort. We first thank the authors for providing the content of the program. We are grateful to the members of the Organization Committee, who managed different tracks and aspects of the conference, our Program Committee and the Senior Program Committee, who worked very hard in reviewing papers and providing feedback for authors. Finally, we thank our publishing firm Aptara Inc., ACM SIGCHI, and our generous corporate supporters, our Platinum Sponsors Openstreams.ai and Tetrosft, Gold sponsor Mphasis-IIITB Cognitive Computing CoE, Silver Sponsors Reality Labs Research and Bobble.ai, Bronze Sponsors CCC Computing Community Consortium and IIIT Bangalore, which is our host institute, for their support.

We hope that you will find ICMI interesting and thought-provoking and that the conference will continue to be a valuable opportunity to share ideas with other researchers and practitioners from institutions around the world.

Lisa Anthony
ICMI’22 Program Chair
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Abhinav Dhall
ICMI’22 Program Chair
IIT Ropar, India

Albert Ali Salah
ICMI’22 Program Chair
Utrecht University, the Netherlands & Bogazici University, Turkey

Richa Singh
ICMI’22 Program Chair
IIT Jodhpur, India
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  Viswanath Gopalakrishnan (IIIT Bangalore, India)

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  Fabien Ringeval (Université Grenoble Alpes, France)
  Nikita Soni (University of Illinois Chicago, USA)

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  Thenalapadi S. Mohan (Pragyan Data Labs, India)
  Anbumani Subramanian (Intel, India)

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  Vivek Yadav (IIIT Bangalore, India)
  Vijayalakshmi Govindaraj (Kyndryl, India)

Grand Challenge Chairs
  Shyam Rajagopalan (St. John's Research Institute, India)
  Subrahmanyam Murala (IIT Ropar, India)

Web Chairs
  Manoj HP (IIIT Bangalore, India)
  Kumar Shubham (IISc Bangalore, India)

Virtual Platform Chairs
  Arunraj Gopalsamy (Kyndryl, India)
  Sanjay Chitnis (RV University, India)

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Stefan Kopp (Bielefeld University, Germany)
Shiro Kumano (Nippon Telegraph and Telephone Corporation, Japan)
Gale Lucas (University of Southern California, USA)
Marwa Mahmoud (University of Glasgow, UK)
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Gelareh Mohammadi (University of New South Wales, Australia)
Sarah Morrison-Smith (Hamilton College, USA)
Mikio Nakano (C4A Research Institute, Japan)
Tempestt Neal (University of South Florida, USA)
Workshop Organizers

Workshop on Multimodal Affect and Aesthetic Experience

Theodoros Kostoulas (University of the Aegean, Greece)
Michal Muszynski (IBM Research Europe, Switzerland)
Leimin Tian (Monash University, Australia)
Edgar Roman-Rangel (Instituto Tecnologico Autonomo de Mexico, Mexico)
Theodora Chaspari (Texas A&M University, USA)
Panos Amelidis (Bournemouth University, UK)

3rd Workshop on Generation and Evaluation of Non-verbal Behaviour for Embodied Agents

Pieter Wolfert (Ghent University, Belgium)
Taras Kucherenko (SEED – Electronic Arts, Sweden)
Youngwoo Yoon (ETRI, South Korea)
Zerrin Yumak, (Utrecht University, the Netherlands)
Gustav Eje Henter (KTH Royal Institute of Technology, Sweden)
Carla Viegas (Carnegie Mellon University, USA)

2nd International Workshop on Deep Video Understanding

Keith Curtis (National Institute of Standards and Technology, USA)
George Awad (National Institute of Standards and Technology, USA)
Shahzad Rajput (Georgetown University & National Institute of Standards and Technology, USA)

4th Workshop on Modeling Socio-Emotional and Cognitive Processes from Multimodal Data In-the-Wild

Bernd Dudzik (Delft University of Technology, the Netherlands)
Dennis Küster (University of Bremen, Germany)
David St-Onge (École de Technologie Supérieure, Canada)
Felix Putze (University of Bremen, Germany)
3rd Workshop on Social Affective Multimodal Interaction for Health

Hiroki Tanaka (Nara Institute of Science and Technology, Japan)
Satoshi Nakamura (Nara Institute of Science and Technology, Japan)
Kazuhiro Shidara (Nara Institute of Science and Technology, Japan)
Jean-Claude Martin (CNRS-LISN, Université Paris Saclay, France)
Catherine Pelachaud (CNRS-ISIR, Sorbonne University, France)

3rd ICMI Workshop on Bridging Social Sciences and AI for Understanding Child Behaviour

Heysem Kaya (Utrecht University, the Netherlands)
Anika van der Klis (Utrecht University, the Netherlands)
Maryam Najafian (MIT, USA)
Saeid Safavi (University of Surrey, UK)

Reviewers

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Kangas, Jari
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Müller, Philipp
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Nguyen, Vickie
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Savoye, Yann  
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Schmuck, Viktor  
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Sharma, Garima  
Sharma, Gulshan  
Sharma, Mansi  
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Singh, Monisha  
Somandepalli, Krishna  
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Srinivasan, Arjun  
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Stefanov, Kalin  
Struc, Vitomir  
Subramanian, Ramathan  
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Tran, Trang  
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Wang, Isaac  
Wang, Zhifeng  
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Xiao, Yu  
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Yoon, Sang Ho  
Zancanaro, Massimo  
Zanna, Khadija  
Zeng, Donghuo  
Zhang, Guangtao  
Zhou, Guojing  
Ziemer, Tim

**Student Volunteers (in-person)**

Gulshan Sharma  
Ravikiran Parameshwara  
Shyam Krishna  
Anirban Mukherjee  
Laxminarayen  
Rohit Katla  
Paritosh Bisht  
Divyam Choudhary  
Dhruv Awasthi  
Harshita Soni  
Preyas Garg

**Student Volunteers (virtual)**

Agrim Jain  
Akshat Garg

**Booklet Design**

Divyam Choudhary  
Manoj HP
CONFERENCE PROGRAM

Keynotes at a Glance

What is Multimodal?
Louis-Philippe Morency

The Future of the Body in Tomorrow’s Workplace
Justine Cassell

Real Talk, Real Listening, Real Change
Deb Roy

Focus on People: Five Questions from Human-Centered Computing
Daniel Gatica-Perez
What is Multimodal?

Abstract: Our experience of the world is multimodal – we see objects, hear sounds, feel texture, smell odors, and taste flavors. In recent years, a broad and impactful body of research emerged in artificial intelligence and related fields under the umbrella of multimodal, characterized by multiple modalities. As we formalize a long-term research vision for multimodal research, it is important to reflect on its foundational principles and core technical challenges. What is multimodal? Answering this question is complicated by the multidisciplinary nature of the problem, spread across many domains and research fields. This talk is based on an extensive synthesis of 700+ research papers, to propose computational and theoretical foundations for multimodal research, with a focus on multimodal machine learning. Two key principles have driven many multimodal innovations: heterogeneity and interconnections from multiple modalities. Historical and recent progress will be synthesized in a research-oriented taxonomy, centered around 6 core technical challenges: representation, alignment, reasoning, generation, transference, and quantification. The talk will conclude with open questions and unsolved challenges essential for a long-term research vision in multimodal research.
Bio: Louis-Philippe Morency is Associate Professor in the Language Technology Institute at Carnegie Mellon University where he leads the Multimodal Communication and Machine Learning Laboratory (MultiComp Lab). He was formerly research faculty in the Computer Sciences Department at University of Southern California and received his Ph.D. degree from MIT Computer Science and Artificial Intelligence Laboratory. His research focuses on building the computational foundations to enable computers with the abilities to analyze, recognize and predict subtle human communicative behaviors during social interactions. He received diverse awards including AI’s 10 to Watch by IEEE Intelligent Systems, NetExplo Award in partnership with UNESCO and 10 best paper awards at IEEE and ACM conferences. His research was covered by media outlets such as Wall Street Journal, The Economist and NPR.

The Future of the Body in Tomorrow’s Workplace

Abstract: Even in the most hectic or time-conscious workplace, employees gather in person to chat. And even in the most networked workplace, employees still make time for face-to-face collaboration. This isn’t surprising if we consider that the ability and desire to engage in face-to-face communication (using eye gaze to manage turn-taking, head nods to indicate listening, and smiles to indicate attention) starts soon after birth – well before infants even learn to talk. We might say that we are built to communicate face-to-face! But what role will embodied interaction play in the future workplace, when we will be interacting with autonomous robots, engaging with other people through presence robots, and working in a virtual world where we and our colleagues are represented by avatars? In this talk I will describe some
of the ways that embodied interaction is likely to change in the future, and some of the ways that we need to take those future scenarios into account as we design and implement multimodal interfaces.

Bio: Justine Cassell holds the Dean’s Chair in Language Technologies at Carnegie Mellon University, and is also a Senior Researcher at Inria Paris, where she holds a PRAIRIE chair in Artificial Intelligence. Cassell was named a member of the French governmental council the CNNUM, on the future of digital technology, in 2021, was honored with the Henry and Bryna David award by the National Academies of Science in 2018, received the AAMAS “Influential Paper” award in 2017, and is a fellow of the AAAS, RSE, and ACM. She received tenure as a faculty member at MIT. She has been carrying out research on the multimodal nature of conversation, and multimodal technologies, for a very long time.

Real Talk, Real Listening, Real Change

Abstract: In an era of rising toxic polarization, political intolerance, and plummeting social trust, the need to listen to one another could not be greater. For all the promise of social media to give everyone a voice, in reality it is the loudest and most polarizing voices that tend to dominate. Our research and development teams at the MIT Center for Constructive Communication and Cortico are developing tools and methods designed to foster authentic conversation and scalable deep listening by merging age-old human practices of facilitated dialogue with modern methods of digital design, speech and language processing, and AI-powered data science. We have partnered with field organizations – ranging from small community organizations to municipalities to global nonprofits – to make sense of the conversations they collect,
amplify typically underheard voices, inform public understanding, drive better policy and decisions, and enable unforeseen connections across the ideological spectrum. In this talk I will provide an overview of the approach, highlight some case studies, and sketch open research questions motivated by the work.

Bio: Deb Roy is Professor of Media Arts and Sciences at MIT where he directs the MIT Center for Constructive Communication (CCC). He is also co-founder and CEO of Cortico, a nonprofit social technology company and deployment partner of CCC. In collaboration with colleagues at CCC, Cortico, and a growing network of collaborators, Roy designs human-machine systems for understanding and navigating social media ecosystems, and for creating new communication spaces for stronger democracy. Previously Roy was a Visiting Professor at Harvard Law School in 2021-22, Executive Director of the MIT Media Lab from 2019-21, Twitter’s Chief Media Scientist from 2013-17, and co-founder & CEO of Bluefin Labs, a media analytics company that became Twitter’s largest acquisition to date in 2013. He is the author of over 175 academic papers including a study of the spread of false news that was the cover of Science magazine in 2018 and one of the most influential academic publications of the year. Roy’s widely-viewed TED talk Birth of a Word presents his research on his son’s language development that led to new ideas in media analytics, while his 2021 Chautauqua lecture envisions a new kind of social communication platform for a stronger democracy.

Focus on People: Five Questions from Human-Centered Computing

Daniel Gatica-Perez
Professor,
Idiap Research Institute and EPFL.
Abstract: A substantial body of research in multimodal interaction has studied how people naturally interact – face-to-face and through machines – and developed technology to analyze, support, and extend such forms of interaction. The talk will share personal experiences and views on how audio-visual and ubiquitous research on social interaction has evolved over the past two decades. Five recurrent questions, then and now, include how to study interaction in everyday life; how to learn from and collaborate with the humanities and social sciences; how to think about data; how to address the challenges brought by automation; and how to engage and empower individuals and communities to take part in research projects. Today, the limitations of technology-centric solutions are more evident than ever. Future research with a people-first focus will continue to call for reflection, commitment, and action for a long-term alignment with societal needs and nature’s limits.

Bio: Daniel Gatica-Perez directs the Social Computing Group at Idiap, and is adjunct professor with EPFL School of Engineering and College of Humanities. His research uses methods from ubiquitous computing, social media, and machine learning to study how people and technology interface in everyday life. He has been a member of the ICMI community in the last two decades, serving in the past as Chair of the Conference Steering Board among other roles. He serves on the Editorial Board of the Proceedings of the ACM on Interactive, Mobile, Wearable, and Ubiquitous Technologies (IMWUT). He also works with cities and organizations on social innovation projects.
## Schedule At a Glance

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<th>Event Description</th>
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<td><strong>Monday, 7th Nov</strong></td>
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<td>9:00 AM - 11:45 AM</td>
<td>DVU (Virtual)</td>
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<tr>
<td>9:00 AM - 12:30 PM</td>
<td>SAMIHIH (Hybrid, BR3)</td>
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<td>10:00 AM - 5:15 PM</td>
<td>MSECP-Wild (Hybrid, MR3)</td>
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<tr>
<td>2:00 PM - 5:00 PM</td>
<td>Tutorial (Hybrid, BR3)</td>
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<tr>
<td>2:30 PM - 6:30 PM</td>
<td>GENEAA (Virtual)</td>
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<tr>
<td><strong>Tuesday, 8th Nov</strong></td>
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<tr>
<td>8:30 AM - 9:00 AM</td>
<td>Opening</td>
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<tr>
<td>9:00 AM - 10:00 AM</td>
<td>Session 1; Chair: Raj Tulumuri</td>
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<tr>
<td>10:00 AM - 10:20 AM</td>
<td>Coffee Break</td>
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<tr>
<td>10:20 AM - 11:20 AM</td>
<td>Session 2; Chair: Richa Singh</td>
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<tr>
<td>11:20 AM - 11:30 AM</td>
<td>Coffee Break</td>
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<tr>
<td>11:30 AM - 12:30 PM</td>
<td>Keynote: LP Morency; Chair: Dinesh Jayagopi</td>
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<tr>
<td>12:30 PM - 2:00 PM</td>
<td>Lunch</td>
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<tr>
<td>2:00 PM - 3:00 PM</td>
<td>Posters 1 (in-person) Sponsors (Live on Airmee)</td>
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<tr>
<td>3:00 PM - 3:30 PM</td>
<td>Coffee Break</td>
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<tr>
<td>3:30 PM - 5:00 PM</td>
<td>Posters 2 (Virtual)</td>
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<tr>
<td>5:00 PM - 6:00 PM</td>
<td>Sustained Accomplishment Award: Daniel Gatica-Perez Chair: Yukiko Nakano</td>
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<tr>
<td>6:30 PM</td>
<td>Conference Reception</td>
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</tbody>
</table>
# Schedule At a Glance

<table>
<thead>
<tr>
<th>Wednesday, 9th Nov</th>
<th>Thursday, 10th Nov</th>
<th>Friday, 11th Nov</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>9:00 AM - 10:00 AM</strong>&lt;br&gt;Session 3; Chair: Carlos Busso</td>
<td><strong>9:00 AM - 10:00 AM</strong>&lt;br&gt;Session 5; Chair: Ramanathan Subramanian</td>
<td><strong>9:00 AM - 2:30 PM</strong>&lt;br&gt;Doctoral Consortium (Hybrid, BR3)</td>
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<tr>
<td><strong>10:00 AM - 10:20 AM</strong>&lt;br&gt;Coffee Break</td>
<td><strong>10:00 AM - 10:20 AM</strong>&lt;br&gt;Coffee Break</td>
<td><strong>9:30 AM - 1:15 PM</strong>&lt;br&gt;WoCBU (Virtual)</td>
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<tr>
<td><strong>10:20 AM - 11:20 AM</strong>&lt;br&gt;Session 4 Chair: Lisa Anthony</td>
<td><strong>10:20 AM - 11:20 AM</strong>&lt;br&gt;Session 6</td>
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<td><strong>11:20 AM - 11:30 AM</strong>&lt;br&gt;Coffee Break</td>
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<tr>
<td><strong>11:30 AM - 12:30 PM</strong>&lt;br&gt;Blue Sky Papers Chair: Jean-Claude Martin</td>
<td><strong>11:30 AM - 12:30 PM</strong>&lt;br&gt;Challenge Overview Town Hall Meeting</td>
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<td><strong>12:30 PM - 2:00 PM</strong>&lt;br&gt;Lunch</td>
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<tr>
<td><strong>2:00 PM - 3:00 PM</strong>&lt;br&gt;Posters 3 (in-person) Sponsors (Live on Airmeet)</td>
<td><strong>2:00 PM - 3:00 PM</strong>&lt;br&gt;Posters 5 (in-person) Sponsors (Live on Airmeet)</td>
<td><strong>2:00 PM - 5:10 PM</strong>&lt;br&gt;MAAE (Virtual)</td>
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<td><strong>3:00 PM - 3:30 PM</strong>&lt;br&gt;Coffee Break</td>
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<tr>
<td><strong>3:30 PM - 5:00 PM</strong>&lt;br&gt;Posters 4 &amp; Demo (Virtual)</td>
<td><strong>3:30 PM - 5:00 PM</strong>&lt;br&gt;Posters 6 (Virtual)</td>
<td><strong>3:30 PM - 5:00 PM</strong>&lt;br&gt;Posters 6 (Virtual)</td>
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<tr>
<td><strong>5:00 PM - 6:00 PM</strong>&lt;br&gt;Keynote: Justine Cassell; Chair: Albert Ali Salah</td>
<td><strong>5:00 PM - 6:00 PM</strong>&lt;br&gt;Keynote: Deb Roy + Main Conference Closing Chair: Abhinav Dhall</td>
<td><strong>5:00 PM - 6:00 PM</strong>&lt;br&gt;Keynote: Deb Roy + Main Conference Closing Chair: Abhinav Dhall</td>
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<td><strong>7:00 PM</strong>&lt;br&gt;Conference Banquet</td>
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</tbody>
</table>
PROGRAM OUTLINE

Venue and Booth Layout

Ballroom 1 (BR1)
- All Days Sponsor Booths
  - Bobble AI
  - Openstream
  - Tetrasoft
- Poster Sessions
  - 1, 3, 5
  - (8th, 9th, 10th)
- & Demos (9th)

Ballroom 2 (BR2)
- Main Conference (8th, 9th, 10th)
- Conference Banquet (9th)

Ballroom 3 (BR3)
- SAMIH (7th)
- Tutorial (7th)
- Doctoral Consortium (11th)

Meeting Room 3 (MR3)
- MSECP-Wild (7th)
- Grand Challenge (11th)

Meeting Room 1 (MR1)
- Organizer’s Room (7th, 8th)

46 Ounces
- Conference Reception (8th)
## PROGRAM OUTLINE

### 7th November, Monday

2nd International Workshop on Deep Video Understanding (DVU)
Half Day, Virtual

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>9:00 AM</td>
<td>Welcome</td>
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</table>
| 9:05 AM| Introduction to the Deep Video Understanding Grand Challenge  
*George Awad*, National Institute of Standards and Technology, USA |
| 9:30 AM| Invited talk: First-Person Video Understanding and the Ego4D Dataset  
*Kristen Grauman*, Professor at University of Texas at Austin, USA |
| 10:15 AM| Virtual coffee break                                                 |
| 10:25 AM| Oral paper: Predicting User Confidence in Video Recordings with Spatio-Temporal Multimodal Analytics  
*Andrew Emerson, Patrick Houghton, Ke Chen, Vinay Basheerabad, Rutuja Ubale and Chee Wee Leong* |
| 10:50 AM| Invited talk: Fine-Grained Video Understanding through Grounded Situations  
*Makarand Tapaswi*, Assistant Professor at IIIT Hyderabad, India |
| 11:35 AM - 11:45 AM| Conclusion                                                        |
3rd Workshop on Social Affective Multimodal Interaction for Health (SAMIH)
Half Day, Hybrid (BR3)

9:00 AM  Opening remark and presentation of the TAPAS project
          Hiroki Tankaka

9:10 AM   **Keynote**: Eye Gaze Controlled Human Robot Interfaces for Users
          with Severe Speech and Motor Impairment
          Pradipta Biswas
          Session Chair: Jean-Claude Martin

9:55 AM   Coffee Break

10:10 AM - 12:10 PM  Paper Presentations
          Session Chair: Hiroki Tankaka

10:10 AM   **Paper 1**: An Architecture Supporting Configurable Autonomous Multimodal Joint-Attention-Therapy for Various Robotic Systems
          André Groß, Christian Schütze, Britta Wrede and Birte Richter

10:30 AM   **Paper 2**: Exploring Facial Metric Normalization For Within- and Between-Subject Comparisons in a Multimodal Health Monitoring Agent
          Oliver Roesler, Hardik Kothare, William Burke, Michael Neumann,
          Jackson Liscombe, Andrew Cornish, Doug Habberstad, David Pautler,
          David Suendermann-Oeft and Vikram Ramanarayanan

10:50 AM   **Paper 3**: Enabling Non-Technical Domain Experts to Create Robot-Assisted Therapeutic Scenarios via Visual Programming
          Christian Schütze, André Groß, Britta Wrede and Birte Richter

11:10 AM   Coffee Break

11:30 AM   **Paper 4**: Towards Multimodal Dialog-Based Speech & Facial Biomarkers of Schizophrenia
          Vanessa Richter, Michael Neumann, Hardik Kothare, Oliver Roesler,
          Jackson Liscombe, David Suendermann-Oeft, Sebastian Prokop,
          Anzalee Khan, Christian Yavorsky, Jean-Pierre Lindenmayer and
          Vikram Ramanarayanan

11:50 AM   **Paper 5**: A Wavelet-based Approach for Multimodal Prediction of Alexithymia from Physiological Signals
          Valeria Filippou, Nikolas Theodosiou, Mihalis Nicolaou, Elena Constantinou,
          Georgia Panayiotou and Marios Theodorou
4th Workshop on Modeling Socio-Emotional and Cognitive Processes from Multimodal Data In-the-Wild (MSECP-Wild)
Full Day, Hybrid (MR3)

10:00 AM Welcome Note
10:10 AM Invited Talk: Zakia Hammal (In-Person)
11:00 AM Coffee Break

Session 1: Data Collection and Evaluation

11:15 AM How can Interaction Data be Contextualized with Mobile Sensing to Enhance Learning Engagement Assessment in Distance Learning?
George-Petru Ciordas-Hertel, Daniel Biedermann, Marc Winter, Julia Mordel, and Hendrik Drachsler

11:35 AM Exploring the Benefits of Spatialized Multimodal Psychophysiological Insights for User Experience Research
Frederic Simard, Tony Aumont, Sayeed A. D. Kizuk, and Pascal E. Fortin

11:55 AM Predicting evaluations of entrepreneurial pitches based on multimodal nonverbal behavioral cues and self-reported characteristics
Kostas Stoitsas, İtir Önal Ertuğrul, Werner Liebregts, and Merel M. Jung (Virtual)

12:15 PM Lunch Break
2:00 PM Invited Talk: Hayley Hung (Virtual)
2:50 PM Coffee Break

Session 2: Context Sensitive Modeling

3:05 PM Contextual Modulation of Affect: Comparing Humans and Deep Neural Networks
Soomin Shin, Doo Yon Kim, and Christian Wallraven (Virtual)
### 3:25 PM
Improving Supervised Learning in Conversational Analysis through Reusing Preprocessing Data as Auxiliary Supervisors
*Joshua Y. Kim, Tongliang Liu, and Kalina Yacef (Virtual)*

### 3:45 PM
Investigating Transformer Encoders and Fusion Strategies for Speech Emotion Recognition in Emergency Call Center Conversations
*Theo Deschamps-Berger, Lori Lamel, and Laurence Devillers*

### 4:05 PM
Coffee Break

### 4:20 PM
Brainstorming in Groups

### 4:50 PM
Plenary Discussion

### 5:05 PM - 5:15 PM
Closing

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#### 3rd Workshop on Generation and Evaluation of Non-verbal Behaviour for Embodied Agents (GENEA)

**Half Day, Virtual**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>2:30 PM</td>
<td>Opening Statement</td>
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<tr>
<td>2:45 PM</td>
<td>Keynote Presentation</td>
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<td><em>Carlos T.ishi</em>, Riken and ATR</td>
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<tr>
<td>3:30 PM</td>
<td>Break (Optional socialisation on gather.town)</td>
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</table>

**Workshop paper presentations**

### 3:40 PM
Understanding Interviewees’ Perceptions and Behaviour towards Verbally and Non-Verbally Expressive Virtual Interviewing Agents
*Jinal Thakkar, Pooja S. B. Rao, Kumar Shubham, Vaibhav Jain, Dinesh Babu Jayagopi*

**Emotional Respiration Speech Dataset**
*Rozemarijn Roes, Francisca Pessanha, Almila Akdag*

Automatic facial expressions, gaze direction and head movements generation of a virtual agent
*Alice Delbosc, Stéphane Ayache, Magalie Ochs*
Can you tell that I'm confused? An overhearer study for German backchannels by an embodied agent

*Isabel Donya Meywirth, Jana Götze*

5:00 PM  Break (Optional socialisation on gather.town)

5:15 PM  Keynote Presentation

*Judith Holler, Radboud University*

6:00 PM  Group Discussion

6:25 PM  Reproducibility award and Closing remarks

6:30 PM  Informal mingle

**Tutorial: Open-Task Multimodal Conversational Assistants**

Half Day, Hybrid (BR3)

2:00 PM  Part 1: Introduction

- What is a Conversational Agent?
- Task Assistants
- Open-task Assistants
- Dialogue Systems Concepts

2:30 PM  Part 2: Multimodal Conversational Agents

- Multimodal Conversations
- Virtual Assistant Embodiment and Personality
- Simple Dialog Managers / DST

3:30 PM  Part 3: Conversational Agent Components

- Dialog Policy
- Answering User Needs
- Response Generation

4:30 PM - 5:00PM  Part 4: Case studies

- Case Study A – NOVA Wiki Wizard
- Case Study B – iFetch: Online fashion shopping assistant
- Case Study C – TWIZ: The Multimodal Task-Assistant
8th November, Tuesday

8:30 AM  Opening Session

9:00 AM  Oral Session "Best Paper Nominees"
  Session Chair: Raj Tulumuri

  Detecting Change Talk in Motivational Interviewing using Verbal and Facial Information
  Yukiko I. Nakano, Eri Hirose, Tatsuya Sakato, Shogo Okada, Jean-Claude Martin

  Exploratory Study on the Perception of Intelligent Virtual Agents with Non-Native Accents using Synthetic and Natural Speech in German
  David Obremski, Helena Babette Hering, Paula Friedrich, Birgit Lugrin

  Commensality or reverie in eating? Exploring the solo dining experience
  Mimi Bocanegra, Mailin Lemke, Roelof A.J. de Vries, Geke D.S. Ludden

  Structured Multimodal Fusion Network for Referring Image Segmentation
  Mingcheng Xue, Yu Liu, Kaiping Xu, Haiyang Zhang, Chengyang Yu

10:00 AM  Coffee Break

10:20 AM  Oral Session "Multimodal Machine Learning"
  Session Chair: Richa Singh

  A Spatio-temporal Learning for Music Conditioned Dance Generation
  Li Zhou, Yan Luo
Emotions Matter: Towards Personalizing Human-System Interactions Using a two-layer Multimodal Approach
Apostolos Kalatzis, Vishnunarayan Girishan Prabhu, Saidur Rahman, Mike Wittie, Laura Stanley

Pose Uncertainty Aware Movement Synchrony Estimation via Spatial-Temporal Graph Transformer
Jicheng Li, Anjana Bhat, Roghayeh Barmaki

Generalized Product-of-Experts for Learning Multimodal Representations in Noisy Environments
Abhinav Joshi, Naman Gupta, Jinang Shah, Binod Bhattarai, Ashutosh Modi, Danail Stoyanov

Towards creating a conversational memory for long-term meeting support: predicting memorable moments in multi-party conversations through eye-gaze
Maria Tsfasman, Kristian Fenech, Morita Tarvirdians, Andras Lorincz, Catholijn Jonker, Catharine Oertel

11:20 AM Coffee Break
11:30 AM Keynote: Louis-Philippe Morency
Session Chair: Dinesh Babu Jayagopi
What is Multimodal?

12:30 PM Lunch
2:00 PM Posters 1 (in-person)

Towards Accessible Sign Language Assessment and Learning
Neha Tarigopula, Sandrine Tornay, Skanda Muralidhar, Mathew Magimai Doss

Personalized Productive Engagement Recognition in Robot-Mediated Collaborative Learning
Vetha Vikashini Chithrara Raghuram, Hanan Salam, Jauwairia Nasir, Barbara Bruno, Oya Celiktutan

A Deep Dive Into Neural Synchrony Evaluation for Audio-visual Translation
Shravan Nayak, Christian Schuler, Debjoy Saha, Timo Baumann

Towards Commensal Activities Recognition
Radoslaw Niewiadomski, Gabriele De Lucia, Gabriele Grazzi, Maurizio Mancini
Influence of Passive Haptic and Auditory Feedback on Presence and Mindfulness in Virtual Reality Environments
Nadine Wagener, Alex Ackermann, Gian-Luca Savino, Bastian Dänekas, Jasmin Niess, Johannes Schäning

Age Regression for Human Voices
Martin T. Schorradt, Douglas Cunningham

Detecting Change Talk in Motivational Interviewing using Verbal and Facial Information
Yukiko I. Nakano, Eri Hirose, Tatsuya Sakato, Shogo Okada, Jean-Claude Martin

Exploratory Study on the Perception of Intelligent Virtual Agents with Non-Native Accents using Synthetic and Natural Speech in German
David Obremski, Helena Babette Hering, Paula Friedrich, Birgit Lugrin

Does Audio help in deep Audio-Visual Saliency prediction models?
Ritvik Agrawal, Shreyank Jyoti, Rohit Girmaji, Sarath Sivaprasad, Vineet Gandhit

Emotions Matter: Towards Personalizing Human-System Interactions Using a two-layer Multimodal Approach
Apostolos Kalatzis, Vishnunarayan Girishan Prabhu, Saidur Rahman, Mike Wittie, Laura Stanley

Generalized Product-of-Experts for Learning Multimodal Representations in Noisy Environments
Abhinav Joshi, Naman Gupta, Jinang Shah, Binod Bhattarai, Ashutosh Modi, Danail Stoyanov

3:00 PM Coffee Break

3:30 PM Posters 2 (Virtual)

Multi-level Fusion of Multi-modal Semantic Embeddings for Zero Shot Learning
Zhe Kong, Xin Wang, Neng Gao, Yifei Zhang, Yuhan Liu, Chenyang Tu

WEDAR: Webcam-based Attention Analysis via Attention Regulator Behavior Recognition with a Novel E-reading Dataset
Yoon Lee, Haoyu Chen, Guoying Zhao, Marcus Specht
RGBDGaze: Gaze Tracking on Smartphones with RGB and Depth Data
Riku Arakawa, Mayank Goel, Chris Harrison, Karan Ahuja

Cognitive Workload Assessment via Eye Gaze and EEG in an Interactive Multi-Modal Driving Task
Ayca Aygun, Boyang Lyu, Thuan Nguyen, Zachary Haga, Shuchin Aeron, Matthias Scheutz

Robust Transformer-Based Physiological Feature Learning for Multimodal Sentiment Analysis
Shun Katada, Shogo Okada, Kazunori Komatani

Investigating the relationship between dialogue and exchange-level impression
Wenqing Wei, Sixia Li, Shogo Okada

Is Lip Region-of-Interest Sufficient for Lipreading?
Jing-Xuan Zhang, Genshun Wan, Jia Pan

A Framework for Video-Text Retrieval with Noisy Supervision
Zahra Vaseqi, Pengnan Fan, James Clark, Martin Levine

A cognitive knowledge-based system for hair and makeup recommendation based on facial features classification
Juhyun Lee, Joosun Yum, Marvin Lee, Ji-Hyun Lee

Real-Time Multimodal Emotion Recognition in Conversation for Multi-Party Interactions
Sandratra Rasendrasoa, Alexandre Pauchet, Julien Saunier, Sébastien Adam

Comparative Analysis of Entity Identification and Classification of Indian Epics
Shreya Sharma, Mukesh Mohania

End-to-End Learning and Analysis of Infant Engagement During Guided Play: Prediction and Explainability
Marc Fraile, Christine Fawcett, Joakim Lindblad, Nataša Sladoje, Ginevra Castellano

Multimodal Across Domains Gaze Target Detection
Francesco Tonini, Cigdem Beyan, Elisa Ricci
Unimodal vs. Multimodal Prediction of Antenatal Depression from Smartphone-based Survey Data in a Longitudinal Study

Mengyu Zhong, Vera Van Zoest, Ayesha Mae Bilal, Fotios C Papadopoulos, Ginevra Castellano

Identification of Adaptive Driving Style Preference through Implicit Inputs in SAE L2 Vehicles

Zhaobo Zheng, Kumar Akash, Teruhisa Misu, Vidya Krishnamoorthy, Miaomiao Dong, Yuni Y Lee, Gaojian Huang

Toward Causal Understanding of Therapist-Client Relationships: A Study of Language Modality and Social Entrainment

Alexandria K Vail, Jeffrey M Girard, Lauren M Bylsma, Jeffrey F Cohn, Jay Fournier, Holly A Swartz, Louis-Philippe Morency

Privacy Preserving Personalization for Video Facial Expression Recognition Using Federated Learning

Ali N Salman, Carlos Busso

EdgeSelect: Smartwatch Data Interaction with Minimal Screen Occlusion

Ali Neshati, Aaron Salo, Shariff Am Faleel, Ziming Li, Hai-Ning Liang, Celine Latulipe, Pourang Irani

Two-Step Gaze Guidance

Tiffany C.K. Kwok, Peter Kiefer, Martin Raubal

Detecting Change Talk in Motivational Interviewing using Verbal and Facial Information

Yukiko I. Nakano, Eri Hirose, Tatsuya Sakato, Shogo Okada, Jean-Claude Martin

Exploratory Study on the Perception of Intelligent Virtual Agents with Non-Native Accents using Synthetic and Natural Speech in German

David Obremski, Helena Babette Hering, Paula Friedrich, Birgit Lugrin

Commensality or reverie in eating? Exploring the solo dining experience

Mimi Bocanegra, Mailin Lemke, Roelof A.J. de Vries, Geke D.S. Ludden
Structured Multimodal Fusion Network for Referring Image Segmentation

*Mingcheng Xue, Yu Liu, Kaiping Xu, Haiyang Zhang, Chengyang Yu*

Does Audio help in deep Audio-Visual Saliency prediction models?

*Ritvik Agrawal, Shreyank Jyoti, Rohit Girmaji, Sarath Sivaprasad, Vineet Gandhi*

5:00 PM - 6:00 PM

Sustained Accomplishment Award Keynote: *Daniel Gatica-Perez*

Session Chair: *Yukiko Nakano*

Focus on People: Five Questions from Human-Centered Computing

6:30 PM

Conference Reception
PROGRAM OUTLINE

9th November, Wednesday

8:30 AM  Opening Session

9:00 AM  Oral Session “Health and Wellbeing”
          Session Chair: Carlos Busso

          Keep in Touch: Combining Touch Interaction with Thumb-to-Finger Microgestures for People with Visual Impairment
          Gauthier Robert Jean Faisandaz, Alix Goguey, Christophe Jouffrais, Laurence Nigay

          Evaluating Just-In-Time Vibrotactile Feedback for Communication Anxiety
          Jason Raether, Ehsanul Haque Nirjhar, Theodora Chaspari

          More than words: breathing features for analysis of depression
          Francisca Pessanha, Heysem Kaya, Alkim Almila Akdag Salah, Albert Ali Salah

          Text-based Interpretable Depression Severity Modeling via Symptom Predictions
          Floris Van Steijn, Gizem Sogancioglu, Heysem Kaya

          Frisson: Leveraging Metasomatic Interactions for Generating Psychogenic Experiences
          Abhinandan Jain, Felix Schoeller, Emilie Zhang, Pattie Maes

10:00 AM  Coffee Break

10:20 AM  Oral Session “Conversation and Groups”
          Session Chair: Lisa Anthony

          Group Formation in Multi-Robot Human Interaction During Service Scenarios
          Xiang Zhi Tan, Elizabeth Jeanne Carter, Prithu Pareek, Aaron Steinfeld

          Conversation Group Detection With Spatio-Temporal Context
          Stephanie Tan, David M.J. Tax, Hayley Hung
Unpretty Please: Ostensibly Polite Wakewords Discourage Politeness in both Robot-Directed and Human-Directed Communication
Ruchen Wen, Brandon Barton, Sebastian Fauré, Tom Williams

Review of realistic behavior and appearance generation in embodied conversational agents: A comparison between traditional and modern approaches
Kumar Shubham, Anirban Mukherjee, Dinesh Babu Jayagopi

The Effects of an Embodied Pedagogical Agent’s Synthetic Speech Accent on Learning Outcomes
Tiffany D. Do, Mamtaj Akter, Zubin Choudhary, Roger Azevedo, Ryan P. McMahan

11:20 AM Coffee Break
11:30 AM Blue Sky Papers
Session Chair: Jean-Claude Martin
11:30 AM Decentralized, not Dehumanized: Bringing Utility to NFTs through Multimodal Interaction
Anqi Wang, Ze Gao, Lik Hang Lee, Tristan Braud, Pan Hui
11:50 AM Beyond the Blue Sky of Multimodal Interaction: A Centennial Vision of Interplanetary Virtual Spaces in Turn-based Metaverse
Lik-Hang Lee, Carlos Bermejo Fernandez, Ahmad Alhilal, Tristan Braud, Simo Hosio, Esmée Henrieke Anne de Haas, Pan Hui
12:10 PM On the Horizon: Interactive and Compositional Deepfakes
Eric Horvitz
12:30 PM Lunch
2:00 PM Posters 3 & Demos (in-person)
Towards creating a conversational memory for long-term meeting support: predicting memorable moments in multi-party conversations through eye-gaze
Maria Tsfasman, Kristian Fenech, Morita Tarvirdians, Andras Lorincz, Catholijn Jonker, Catharine Oertel
Towards using Breathing Features for Multimodal Estimation of Depression Severity
Francisca Pessanha, Heysem Kaya, Alkim Almila Akdag Salah, Albert Ali Salah
Review of realistic behavior and appearance generation in embodied conversational agents: A comparison between traditional and modern approaches
Kumar Shubham, Anirban Mukherjee, Dinesh Babu Jayagopi

Comfortability Recognition from Visual Non-verbal Cues
Maria Elena Lechuga Redondo, Radoslaw Niewiadomski, Rea Francesco, Alessandra Sciutti

Exploring the Detection of Spontaneous Recollections during Video-viewing In-the-Wild using Facial Behavior Analysis
Bernd Dudzik, Hayley Hung

Pull Gestures with Coordinated Graphics on Dual Touchscreen Devices
Vivian Shen, Chris Harrison

All Birds Must Fly: The Experience of Multimodal Hands-free Gaming with Gaze and Nonverbal Voice Synchronization
Ramin Hedeshy, Chandan Kumar, Mike Lauer, Steffen Staab

Neural Encoding of Songs is Modulated by Their Enjoyment
Gulshan Sharma, Pankaj Pandey, Ramanathan Subramanian, Krishna Prasad Miyapuram, Abhinav Dhall

Privacy Preserving Personalization for Video Facial Expression Recognition Using Federated Learning
Ali N Salman, Carlos Busso

Demo: Sound Scope Pad: Controlling a VR Concert with Natural Movement
Masatoshi Hamanaka

Exhibit: Digital Interactive Victim Intake Simulator
Alesia Gainer, Mohammad Soleymani, Zongjian Li, Kalin Stefanov, Ron Artstein, David Cobbins, Mark Core, Natalie Gravier, Carla Gordon, Anton Leuski, Chirag Merchant, David Nelson, David Traum.

Presented By: Alesia Gainer

3:00 PM  Coffee Break
3:30 PM  Posters 4/Demos (Virtual)
Improved Word-level Lipreading with Temporal Shrinkage Network and NetVLAD
Heng Yang, Tao Luo, Yakun Zhang, Mingwu Song, Liang Xie, Ye Yan, Erwei Yin

All Birds Must Fly: The Experience of Multimodal Hands-free Gaming with Gaze and Nonverbal Voice Synchronization
Ramin Hedeshy, Chandan Kumar, Mike Lauer, Steffen Staab

POLLY: A Multimodal Cross-Cultural Context-Sensitive Framework to Predict Political Lying from Videos
Chongyang Bai, Maksim Bolonkin, Viney Regunath, V.S. Subrahmanian

Supervised Contrastive Learning for Affect Modelling
Kosmas Pinitas, Konstantinos Makantasis, Antonios Liapis, Georgios N. Yannakakis

CreativeBot: a Creative Storyteller robot to stimulate creativity in children
Maha Elgarf, Sahba Zojaji, Gabriel Skantze, Christopher Peters

Towards Commensal Activities Recognition
Radoslaw Niewiadomski, Gabriele De Lucia, Gabriele Grazzi, Maurizio Mancini

Influence of Passive Haptic and Auditory Feedback on Presence and Mindfulness in Virtual Reality Environments
Nadine Wagener, Alex Ackermann, Gian-Luca Savino, Bastian Dänekas, Jasmin Niess, Johannes Schäning

Age Regression for Human Voices
Martin T. Schorradt, Douglas Cunningham

Touchless touch with biosignal transfer for online communication
Daria Joanna Hemmerling, Maciej Stroinski, Kamil Kwarciaik, Krzysztof Trusiak, Maciej Szymkowski, Weronika Celniak, William Frier, Orestis Georgiou, Mykola Maksymenko

GazeScale: Towards General Gaze-Based Interaction in Public Places
Marco Porta, Antonino Caminiti, Piercarlo Dondi

Multimodal classification of interruptions in humans’ interaction
Liu Yang, Catherine Achard, Catherine Pelachaud
X-Norm: Exchanging Normalization Parameters for Bimodal Fusion
Yufeng Yin, Jiashu Xu, Tianxin Zu, Mohammad Soleymani

Assessing Multimodal Dynamics in Multi-Party Collaborative Interactions with Multi-Level Vector Autoregression
Robert G. Moulder, Nicholas D. Duran, Sidney K. D'Mello

Towards Accessible Sign Language Assessment and Learning
Neha Tarigopula, Sandrine Tornay, Skanda Muralidhar, Mathew Magimai Doss

Personalized Productive Engagement Recognition in Robot-Mediated Collaborative Learning
Vetha Vikashini Chithrra Raghuram, Hanan Salam, Jauwairia Nasir, Barbara Bruno, Oya Celiktutan

A Deep Dive Into Neural Synchrony Evaluation for Audio-visual Translation
Shravan Nayak, Christian Schuler, Debjoy Saha, Timo Baumann

Endowing Spiking Neural Networks with Homeostatic Adaptivity for APS-DVS Bimodal Scenarios
Mingkun Xu, Faqiang Liu, Jing Pei

Towards Automatic Prediction of Non-Expert Perceived Speech Fluency Ratings
S. Pavankumar Dubagunta, Edoardo Moneta, Eleni Theocharopoulos, Mathew Magimai Doss

Training Computational Models of Group Processes without Groundtruth: the Self- vs External Assessment’s Dilemma
Lucien Maman, Gualtiero Volpe, Giovanna Varni

To Improve Is to Change: Towards Improving Mood Prediction by Learning Changes in Emotion
Soujanya Narayana, Ramanathan Subramanian, Professor Roland Goecke, Ibrahim Radwan

Speaker Motion Patterns during Self-repairs in Natural Dialogue
Elif Ecem Ozkan, Tom Gurion, Julian Hough, Patrick G.T. Healey, Lorenzo Jamone
Real-time Public Speaking Anxiety Prediction Model for Oral Presentations
Giovanna Varni, Timothy Bickmore, Rosalind Picard, Professor Matthew Goodwin, Holly Jimison

MattPod: A design proposal for a multi-sensory solo dining experience
Mimi Bocanegra, Mailin Lemke, Roelof de Vries, Geke Ludden

Demo: MiDriveSafely: Multimodal Interaction for Drive Safely
Denis Ivanko, Alexey Kashevnik, Dmitry Ryumin, Andrey Kitenko, Alexandr Axyonov, Igor Lashkov, Alexey Karpov

Demo: Sound Scope Pad: Controlling a VR Concert with Natural Movement
Masatoshi Hamanaka

Demo: DynaTags: Low-Cost Fiducial Marker Mechanisms
Cassandra Scheirer, Chris Harrison

Demo: Continual Learning about Objects in the Wild: An Interactive Approach
Dan Bohus, Sean Andrist, Ashley Feniello, Nick Saw, Eric Horvitz

Bharat Paudyal, Chris Creed, Ian Williams, Maite Frutos-Pascual

Exhibit: Digital Interactive Victim Intake Simulator
Alesia Gainer, Mohammad Soleymani, Zongjian Li, Kalin Stefanov, Ron Artstein, David Cobbins, Mark Core, Natalie Gravier, Carla Gordon, Anton Leuski, Chirag Merchant, David Nelson, David Traum.

Presented By: Alesia Gainer

5:00 PM - 6:00 PM Keynote: Justine Cassell
Session Chair: Albert Ali Salah
The Future of the body in tomorrow’s workplace?

7:00 PM Conference Banquet
PROGRAM OUTLINE

10th November, Thursday

8:30 AM  Opening Session
9:00 AM   Oral Session “Behavior Analytics and Gaze”
           Session Chair: Ramanathan Subramanian
           Comfortability Recognition from Visual Non-verbal Cues
           Maria Elena Lechuga Redondo, Radoslaw Niewiadomski, Rea Francesco, Alessandra Sciutti
           AffectPro: Towards Constructing Affective Profile Combining Smartphone Typing Interaction and Emotion Self-reporting Pattern
           Satchit Hari, Ajay N, Sayan Sarcar, Sougata Sen, Surjya Ghosh
           Evaluating Calibration-free Webcam-based Eye Tracking for Gaze-based User Modeling
           Stephen Hutt, Sidney K. D’Mello
           Exploring the Detection of Spontaneous Recollections during Video-viewing In-the-Wild using Facial Behavior Analysis
           Bernd Dudzik, Hayley Hung

10:00 AM  Coffee Break
10:20 AM  Oral Session 6: Interfaces and Interaction
           The Impact of Thermal Cues on Affective Responses to Emotionally Resonant Vibrations
           Shaun Alexander Macdonald, Frank Pollick, Stephen Anthony Brewster
           Pull Gestures with Coordinated Graphics on Dual Touchscreen Devices
           Vivian Shen, Chris Harrison
All Birds Must Fly: The Experience of Multimodal Hands-free Gaming with Gaze and Nonverbal Voice Synchronization
Ramin Hedeshy, Chandan Kumar, Mike Lauer, Steffen Staab

EdgeSelect: Smartwatch Data Interaction with Minimal Screen Occlusion
Ali Neshati, Aaron Salo, Shariff Am Faleel, Ziming Li, Hai-Ning Liang, Celine Latulipe, Pourang Irani

Two-Step Gaze Guidance
Tiffany C.K. Kwok, Peter Kiefer, Martin Raubal

11:20 AM Coffee Break
11:30 AM Challenge Overview Town Hall Meeting
12:30 PM Lunch
2:00 PM Posters 5 (in-person)

Mood-Emotion Interplay: A Computational Perspective
Soujanya Narayana

Multimodal Representations and Assessments of Emotional Fluctuations of Speakers in Call Centers Conversations
Yajing Feng

Multimodal Representation Learning For Real-World Applications
Abhinav Joshi

Non-verbal signals in Oral History Archives
Francisca Pessanha

Designing approach for hybrid intelligence techniques for facilitating collaboration informed by social science
Tiffany Matej Hrkalovic

Physiological Sensing for Media Perception & Activity Recognition
Gulshan Sharma

Real-time Feedback for Developing Conversation Literacy
Khalil J Anderson
To Improve Is to Change: Towards Improving Mood Prediction by Learning Changes in Emotion
Soujanya Narayana, Ramanathan Subramanian, Roland Goecke, Ibrahim Radwan

Speaker Motion Patterns during Self-repairs in Natural Dialogue
Elif Ecem Ozkan, Tom Gurion, Julian Hough, Patrick G.T. Healey, Lorenzo Jamone

3:00 PM Coffee Break
3:30 PM Posters 6 (Virtual)

A Spatio-temporal Learning for Music Conditioned Dance Generation
Li Zhou, Yan Luo

Emotions Matter: Towards Personalizing Human-System Interactions Using a two-layer Multimodal Approach
Apostolos Kalatzis, Vishnunarayan Girishan Prabhu, Saidur Rahman, Mike Wittie, Laura Stanley

Pose Uncertainty Aware Movement Synchrony Estimation via Spatial-Temporal Graph Transformer
Jicheng Li, Anjana Bhat, Roghayeh Barmaki

Generalized Product-of-Experts for Learning Multimodal Representations in Noisy Environments
Abhinav Joshi, Naman Gupta, Jinang Shah, Binod Bhattarai, Ashutosh Modi, Danail Stoyanov

Towards creating a conversational memory for long-term meeting support: predicting memorable moments in multi-party conversations through eye-gaze
Maria Tsfasman, Kristian Fenech, Morita Tarvirdians, Andras Lorincz, Catholijn Jonker, Catharine Oertel

Keep in Touch: Combining Touch Interaction with Thumb-to-Finger Microgestures for People with Visual Impairment
Gauthier Robert Jean Faisandaz, Alix Goguey, Christophe Jouffrais, Laurence Nigay
Evaluating Just-In-Time Vibrotactile Feedback for Communication Anxiety
Jason Raether, Ehsanul Haque Nirjhar, Theodora Chaspari

Towards using Breathing Features for Multimodal Estimation of Depression Severity
Francisca Pessanha, Heysem Kaya, Alkim Almila Akdag Salah, Albert Ali Salah

Text-based Interpretable Depression Severity Modeling via Symptom Predictions
Floris Van Steijn, Gizem Sogancioglu, Heysem Kaya

Frisson: Leveraging Metasomatic Interactions for Generating Psychogenic Experiences
Abhinandan Jain, Felix Schoeller, Emilie Zhang, Pattie Maes

Group Formation in Multi-Robot Human Interaction During Service Scenarios
Xiang Zhi Tan, Elizabeth Jeanne Carter, Prithu Pareek, Aaron Steinfeld

Conversation Group Detection With Spatio-Temporal Context
Stephanie Tan, David M.J. Tax, Hayley Hung

Unpretty Please: Ostensibly Polite Wakewords Discourage Politeness in both Robot-Directed and Human-Directed Communication
Ruchen Wen, Brandon Barton, Sebastian Fauré, Tom Williams

Review of realistic behavior and appearance generation in embodied conversational agents: A comparison between traditional and modern approaches
Kumar Shubham, Anirban Mukherjee, Dinesh Babu Jayagopi

The Effects of an Embodied Pedagogical Agent’s Synthetic Speech Accent on Learning Outcomes
Tiffany D. Do, Mamta Akter, Zubin Choudhary, Roger Azevedo, Ryan P. McMahan

Comfortability Recognition from Visual Non-verbal Cues
Maria Elena Lechuga Redondo, Radoslaw Niewiadomska, Rea Francesco, Alessandra Sciutti
AffectPro: Towards Constructing Affective Profile Combining Smartphone Typing Interaction and Emotion Self-reporting Pattern
Satchit Hari, Ajay N, Sayan Sarcar, Sougata Sen, Surjya Ghosh

Evaluating Calibration-free Webcam-based Eye Tracking for Gaze-based User Modeling
Stephen Hutt, Sidney K. D'Mello

Exploring the Detection of Spontaneous Recollections during Video-viewing In-the-Wild using Facial Behavior Analysis
Bernd Dudzik, Hayley Hung

Make Acoustic and Visual Cues Matter: CH-SIMS v2.0 Dataset and AV-Mixup Consistent Module
Yihe Liu, Ziqi Yuan, Huisheng Mao, Zhiyun Liang, Wanqiu Yue Yang, Yuanzhe Qiu, Tie Cheng, Xiaoteng Li, Hua Xu, Kai Gao

The Impact of Thermal Cues on Affective Responses to Emotionally Resonant Vibrations
Shaun Alexander Macdonald, Frank Pollick, Stephen Anthony Brewster

Pull Gestures with Coordinated Graphics on Dual Touchscreen Devices
Vivian Shen, Chris Harrison

DynaTags: Low-Cost Fiducial Marker Mechanisms
Cassandra Scheirer, Chris Harrison

Continual Learning about Objects in the Wild: An Interactive Approach
Dan Bohus, Sean Andrist, Ashley Feniello, Nick Saw, Eric Horvitz

Inclusive Multimodal Voice Interaction for Code Navigation
Bharat Paudyal, Chris Creed, Ian Williams, Maite Frutos-Pascual

Neural Encoding of Songs is Modulated by Their Enjoyment
Gulshan Sharma, Pankaj Pandey, Ramanathan Subramanian, Krishna Prasad Miyapuram, Abhinav Dhall

Towards Human-Machine Collaboration: Multimodal Group Potency Estimation
Nicola Corbellini

5:00 PM - 6:00 PM
Keynote: Deb Roy + Main Conference Closing
Session Chair: Abhinav Dhall
Real Talk, Real Listening, Real Change
PROGRAM OUTLINE

11th November, Friday

Doctoral Consortium
Full Day, Hybrid (BR3)

9:00 AM  Welcome Message  
DC Chairs

9:10 AM  Mood-Emotion Interplay: A Computational Perspective  
Soujanya Narayana

9:35 AM  Multimodal Representations and Assessments of Emotional Fluctuations of Speakers in Call Centers Conversations  
Yajing Feng

9:55 AM  Multimodal Representation Learning For Real-World Applications  
Abhinav Joshi

10:15 AM  Non-verbal signals in Oral History Archives  
Francisca Pessanha

10:35 AM  Coffee break

10:50 AM  Effective Human-Robot Collaboration via Generalized Robot Error Management Using Natural Human Responses  
Maia Stiber

11:10 AM  Designing approach for hybrid intelligence techniques for facilitating collaboration informed by social science  
Tiffany Matej Hrkalovic

11:30 AM  Towards Human-Machine Collaboration: Multimodal Group Potency Estimation  
Nicola Corbellini

11:50 AM  Adaptive User-Centered Multimodal Interaction towards Reliable and Trusted Automotive Interfaces  
Amr Gomaa
12:10 PM Lunch Break

1:30 PM Physiological Sensing for Media Perception & Activity Recognition
Gulshan Sharma

1:50 PM Real-time Feedback for Developing Conversation Literacy
Khalil Anderson

2:10 PM Interdisciplinary corpus-based approach for exploring multimodal conversational feedback
Auriane Boudin

Grand Challenge
Full Day, Hybrid (MR3)

2:30 PM Opening statement

2:45 PM Challenge system presentations

The GENEA Challenge 2022: A large evaluation of data-driven co-speech gesture generation
Youngwoo Yoon, Pieter Wolfert, Taras Kucherenko, Carla Viegas, Teodor Nikolov, Mihail Tsakov, Gustav Eje Henter

Hybrid Seq2Seq Architecture for 3D Co-Speech Gesture Generation
Khaled Saleh

TransGesture: Autoregressive Gesture Generation with RNN-Transducer
Naoshi Kaneko, Yuna Mitsubayashi, Geng Mu

The ReprGesture entry to the GENEA Challenge 2022
Sicheng Yang, Zhiyong Wu, Minglei Li, Mengchen Zhao, Jiuixin Lin, Liyang Chen, Weihong Bao

ReCell: replicating recurrent cell for auto-regressive pose generation
Vladislav Korzun, Anna Beloborodova, Arkady Iliin

4:00 PM Break (Optional socialisation on gather.town)
4:15 PM Challenge system presentations

GestureMaster: Graph-based Speech-driven Gesture Generation
Chi Zhou, Tengyue Bian, Kang Chen

UEA Digital Humans entry to the GENEA Challenge 2022
Jonathan Windle, David Greenwood, Sarah Taylor

Exemplar-based Stylized Gesture Generation from Speech: An Entry to the GENEA challenge 2022
Saeed Ghorbani, Ylva Ferstl, Marc-André Carbonneau

The IVI Lab entry to the GENEA Challenge 2022 -- A Tacotron2 Based Method for Co-Speech Gesture Generation With Locality-Constraint Attention Mechanism
Che-Jui Chang, Sen Zhang, Mubbasir Kapadia

The DeepMotion entry to the GENEA Challenge 2022
Shuhong Lu, Andrew Feng

5:30 PM Group discussion

5:45 PM Reproducibility award and Closing remarks

6:00 PM Informal Mingle

3rd ICMI Workshop on Bridging Social Sciences and AI for Understanding Child Behaviour (WoCBU)
Half Day, Virtual

9:30 AM Opening & Keynote Introduction

9:35 AM Keynote: Shrikanth Narayanan (inc. questions)

10:35 AM Short break

Workshop paper presentations

10:40 AM Head Movement Patterns during Face-to-Face Conversations Vary with Age
Denisa McDonald, Casey Zampella, Evangelos Sariyandi, Aashvi Manakiwala, Ellis Dejardin, John Herrington, Robert Schultz and Birkan Tunc
24th International Conference on Multimodal Interaction

Workshop on Multimodal Affect and Aesthetic Experience (MAAE)
Half Day, Virtual

11:00 AM   Long Break
11:30 AM   Predicting Backchannel Behavior in Multimodal Child-Caregiver Conversation
           Jing Liu, Mitja Nikolaus, Kübra Bodur and Abdellah Fourtassi

11:45 AM   Keynote Introduction
11:50 AM   Keynote: Catia Cucchiarini (inc. questions)

12:50 AM   Approbation of the Child’s Emotional Development Method (CEDM)
           Elena Lyakso, Olga Frolova, Egor Kleshnev, Nersisson Ruban, Mary A. Mekala and K. V. Arulalan

1:10 PM - 1:15 PM   Final remarks and closing

2:00 PM   Opening Remarks
2:10 PM   Keynote: Evridiki Papachristou, International Hellenic University, Greece
           Artificial Intelligence for Fashion

3:10 PM   Short break
3:15 PM   Towards Integration of Embodiment Features for Prosodic Prominance Prediction from Text
           Pranava Madhyastha

3:35 PM   Long Break
4:00 PM   Symbiosis: Design and development of Novel Soft Robotic Structures for Interactive Public Spaces
           Aaron Chooi, Thileepan Stalin, Aby Raj Plamootil Mathai, Arturo Castillo Ugalde, Yixiao Wang, Elgar Kanhere, Gumawang Hiramandala and Pablo Valdivia Y Alvarado
Impact of aesthetic movie highlights on semantics and emotions: a preliminary analysis

Michal Muszynski, Elenor Morgenroth, Laura Vilaclara, Dimitri Van De Ville and Patrik Vuilleumier

Discussion
Tetrasoft is a Global Digital Services company focused on delivering innovation and digital services to leading companies. It helps clients solve the most challenging industry-specific problems and offers tangible benefits through leading-edge technologies and strategies. With a global footprint and a varied group of innovators, Tetrasoft makes its clients stay in front using the best-in-class agile and lean methodologies. It specializes in innovating commercial products and platforms using disruptive technology across Data Engineering, Customer Experience, Quality Engineering, Intelligent Process Automation, Cloud Platforms, Mobile Applications, and Security service lines. Tetrasoft is already generating real value and new growth in the healthcare, property and casualty insurance, and manufacturing industries.

Tetrasoft’s journey with a digital-first approach is a story of growth led by our extremely talented team, which has pushed the boundaries of delivering positive outcomes for our valuable clients. Our insurance, data, and digital solutions have helped our marquee customers in the P&C insurance domain address today’s business and technology challenges and accelerate the digital transformation experience.

Service Offerings

- Insurance Consulting & Advisory
- Core Platform Modernization
- Platforms & Products
- Digital & Cloud

Our industry-leading innovative platform, iEva, supports secure and scalable infrastructure to meet and exceed the next generation of challenges.

The Intelligent Embodied Virtual Assistant (iEva) is an indigenously developed Conversational, Multi-modal, contextual AI solution that offers tremendous capabilities through translation and transcription capabilities. iEva helps enterprises provide meaningful customer, employee, and agent experiences through personalized “human-like conversational AI connections” that scale operations, automate processes, reduce costs, and increase sales.

Global Office: St. Louis US (HQ) | Kingdom of Bahrain
India Office: Hyderabad | Bhubaneswar | Pune

Website: www.tetrasoft.us Email: info@tetrasoft.us
Openstream.ai®
making Multimodal Embodied Conversational Agents more robust and responsible!

Openstream.ai®

EVA™ - The virtual human

Openstream.ai’s EVA™, a state-of-the-art Embodied Conversational Assistant, engages in intuitive, context-aware, multi-turn, unscripted conversations with end users in multiple languages, providing proactive goal-based solutions with minimum user inputs and training needs.

Features of the digital human

- It leverages Openstream.ai’s Plan-based Dialog engine for unscripted conversations.
- Front-end is highly customizable, with integration of third-party tools and services.
- Multimodal interactions are supported using spoken or written language, motions and gestures, and gaze.
- It comprehends rich-media data sources beyond text, including images, video, tables, maps, audio, gestures, motion, and eye movement.
- For faster deployment it is pre-trained in specific domain and industry ontologies.
- Dynamically and responsibly display emotions & facial expressions to enhance user engagement in real-time.
- Can be easily integrated into existing technology environments across touchpoints in a secured manner.

About Openstream.ai®

Openstream.ai® is a pioneer in providing an end-to-end Enterprise Conversational AI Platform that enables digital transformations at 50+ global Fortune 500 companies using context-aware, goal-based virtual assistants that support multimodal, multilingual human-computer interactions across multiple channels using a proprietary NLP engine.

Gartner® named Openstream.ai® the sole “Visionary” in the 2022 Magic Quadrant™ for Enterprise Conversational AI Platforms.

Gartner® predicts that by 2025, multimodal interactions will be a common feature for Embodied Conversational Agents.

Be a part of our journey as we build the future of robust, reliable, and explainable industry-grade embodied conversational agents.

Apply now for exciting roles at jobs@openstream.com

Come work with us

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Be a part of our journey as we build the future of robust, reliable, and explainable industry-grade embodied conversational agents.

Apply now for exciting roles at jobs@openstream.com
Bobble AI is re-imagining the keyboard typing utility on smartphones as a holistic Conversation Media Platform and re-defining conversations by making them more expressive, localized & intelligent through deep-tech innovations around typing, languages, content, voice, & camera.

All the technology innovations including 13 patents that the company has filed are bundled within the Bobble AI smartphone keyboard platform with an installed base of 80 Million users across all types and range of smartphone devices in India. With expressive and personalized content including stickers, GIFs and emojis, deep localization with over 100 languages, AI-based contextual recommendations, speech-to-text, and much more.

The flagship product - Bobble Indic Keyboard allows real-time content creation and personalization through its leading-edge AI technologies like Natural Language Processing (NLP), Text Analytics, Speech-to-Text (STT), Image Synthesis, and Image Enhancements based on Machine and Deep Learning Platforms.

With **Conversation Media Marketing service**, Bobble AI is helping brands become an authentic part of user conversation. Hyper-contextual AI-powered targeting reaches users with relevant branded content, making marketing authentic and fun for users. With **Data As A Service (DaaS)**, Bobble AI provides competitive analysis, and predictive audience segmentation. With **Conversational Tech Solutions (CTS)**, we are offering our research on NLP, computer vision, automated speech recognition along with a massive repository of tagged rich media content in the form of stickers, GIFs, etc. as API and SDK integrations. Thus enabling conversations, organizations and changing the landscape of customer experience.

To know more, visit our website at [https://www.bobble.ai](https://www.bobble.ai)

Reality Labs Research brings together a world-class team of researchers, developers, and engineers to build the future of connection within virtual and augmented reality. From AR glasses and VR headsets to brain computer interface and haptic interaction, we’re creating the next wave of technology just as previous generations have done for us with the potential of changing the world. For more information, visit [https://about.meta.com/realitylabs](https://about.meta.com/realitylabs)
Nearby Information

Restaurants:

Walkable from The Oterra:
- Beijing Bites
- 46 Ounces
- Sri Pillayar Bhavan
- Swad-e-Punjab

2-3 KM away on Neeladri Road:
- Adyar Ananda Bhavan
- Barbeque Nation
- KFC
- Burger King
- McDonalds

Near-by shopping and hang-out areas:
- Neeladri road
- Forum/PVR Nexus Mall Koramangala
- HSR layout BDA Complex

Attractions:

Lal bagh Botanical Garden:
Lalbagh Botanical Garden is located in Bangalore and is nationally and internationally renowned centre for botanical artwork, scientific study of plants and also conservation of plants. A haven for all nature lovers, Lal Bagh covers an area 240 acres in the heart of the city and has nearly 1,854 species of plants.

**Distance from The Ottera:** 18 Km
**Timing:** 6AM - 7PM
**Cost of ticket:** 30 Rs

Cubbon Park:
Cubbon Park, officially known as Sri. Chamarajendra Park is a historic park, located in the heart of the city in the Central Administrative Area. Cubbon Park has a history of over 100 years.

**Distance from The Ottera:** 20 KM
**Timing:** 6:00 am to 6:00 pm; closed on Mondays and second Tuesdays
Bengaluru Palace:
An epitome of great architecture and beauty, The Majestic Bangalore Palace preserves in it the spice of old regal opulence. Currently the central attraction in Bangalore, the palace was built in the year 1878.

**Distance from The Ottera:** 24 KM  
**Time Required:** 4 hours  
**Timings:** 10:00 AM - 5:30 PM  
**Entry Fee:** Indian: INR 230, Foreigner: INR 460

Bangalore Iskcon:
Sri Radha Krishna-chandra Temple is one of the largest Krishna-Hindu temples in the world. It is situated in Bangalore in the Indian state of Karnataka. The temple is dedicated to Hindu deities Radha Krishna.

**Distance from The Ottera:** 20 KM  
**Timing and cost:**  
- **Morning** – 4:15am to 5:15am and 7:15am to 1:15pm  
- **Evening** – 4:15pm to 8:00pm  
- **Weekends and public holidays** – No break in the afternoon  
- **Time Required for darshan:** 1 – 2 hours  
- **Dress Code:** Formal or traditional wear as a mark of respect. (Avoid shorts & casual wears)  
**Entry Fee:** Free (Nominal charges for parking and footwear stand)

Vidhana Soudha:
Vidhana Soudha in Bangalore, India, is the seat of the state legislature of Karnataka. It is constructed in a style described as Neo-Dravidian, and incorporates elements of various Dravidian styles.

**Distance from The Ottera:** 22 KM  
**Entry:** Special Permission required

Bannerghatta Zoo/Safari:
Located 22 km away from Bangalore, the Bannerghatta National Park is a sanctuary for a large variety of flora and fauna. Spread over a massive area of around 104.27 sq. km, this national park was established in the year 1971.

**Distance:** 15 KM  
**Timing:**  
- **Butterfly park and boating:** 9:30 AM - 5:00 PM,  
- **Grand Safari:** 10:00 AM - 4:30 PM,  
- **Closed on Tuesdays**
Time Required: Half-day trip
Tarriff Information: https://bannerghattabiologicalpark.org/tariff.html

More sightseeing information on:
Word Search Puzzle

STOGBIDNULMPIKTT
TFRCEDIRASMAKAH
NOOIXNUIMEGOEE
ESOHRLCTLUPSRO
GALMAMPABBVFHT
ARGGOWWBYJPILET
OTNUIWOCBUELVEE
CEHLRBNELFTKHFR
BTDIOEDIVPEEDFA
YYZXMAMERTSNEPOP
ICMIATDGYFXICO
MCPJTASAGCMGTI
ZRRREALITYLABSPR
LADOMITLUMAFONR
DIALOGUEQLENQFL

ICMI  OPENSTREAM  MULTIMODAL
GENEA  WOCBU  HUMAN
BOBBLEAI  THEOTTERA  DEEPVIDEO
AGENTS  REALITYLABS  DIALOGUE
MAAE  COFFEEBREAK  TETRASOFT
SAMIH  BENGALURU  MSECWPWILD
IIITB

Answer: