

# **International Doctoral Summer School in Conversational Systems for Mental e-health**

From October 5<sup>th</sup> to 9<sup>th</sup>, 2020, the MENHIR summer school (Conversational Systems for Mental e-health) aims to provide innovative training for early stage researchers (ESR) in the application of conversational systems to the e-health and wellbeing domains. The school is mainly targeting postgraduate students (PhD and master), but it is also open to everybody who is interested in the use of conversational technologies to understand, promote and maintain mental health, helping people with anxiety and depression.

MENHIR summer school is organized in the core of the H2020 European project MENHIR (<https://menhir-project.eu>), which coordinated by the University of Granada and deals with the use of chatbots to engage users in the management of their own wellbeing providing a continued and immediate assistance that complements increasingly saturated mental health services.

## **Programme**

The programme includes lectures, round tables and hands-on labs covering, among others, the following topics:

- Conversational technologies for mental health
- Introduction to depression and anxiety and their identification -Introduction to conversational systems
- EU initiatives about conversational systems for e-health
- Innovative service delivery
- Review of mental health apps
- Technology and social media in suicidal behaviour and suicide prevention
- Automatic behaviour estimation and coaching
- Socio-affective interactions with virtual agents
- Physiopsychological feedback and neurofeedback
- Ethical issues in digital technologies and mental health
- Junior researcher round table with experts
- Hand-on voice user experience design
- Building a chatbot with Google technology
- Building a chatbot with Amazon Alexa
- Automatic emotion recognition from paralinguistic features
- Using physiological sensors for automatic emotion recognition
- Eye-tracking and attention detection
- Data science for mental health

## **Methodology**

All activities will be held online. The lectures and round tables will take place synchronously through an online meeting tool, while the lab sessions will also encompass the use of online notebooks and coding sites. In the lab sessions the participants will use different software that will be provided via email in the participants bundle prior to the start of the school. These sessions will involve designing the interaction with the users attending to their needs as well as coding the corresponding technical solutions, so multidisciplinary groups of students (with technical and psychology background) can work together towards common objectives based on their different expertise.

## **Speakers**

-**Nieves Ábalos**, Monoceros (Spain):

Computer engineer from the University of Granada, she has been investigating Natural Language Processing, Dialogue Systems and Artificial Intelligence since 2009. Before (2013-2019), she was part of the BEEVA innovation team, first in R&D and then creating digital products. She currently is currently an entrepreneur in Monoceros ([monoceros.xyz](https://monoceros.xyz)). MONOCEROS is an Innovation Studio focused on Conversational Experiences, mainly extending and building voice applications for assistants such as Amazon Alexa or Google Assistant and giving voice to businesses, helping organisations building new digital products about emerging technologies.

**-David Babington**, Action Mental Health (Northern Ireland, UK):

Chief Executive of Action Mental Health (AMH) since 2010 he is providing leadership to approximately 170 staff spread across thirteen locations. Ensuring delivery of tailored training and development support for clients whilst promoting the organisation and securing its sustainability. In AMH they work to find innovative ways to help those who really need help to recover and get back on their feet to lead more fulfilling lives.

**-Oresti Baños**, Dept. Arquitectura y Tecnología de Computadores, University of Granada (Spain):

Oresti Baños is an Associate Professor of Computational Behaviour Modelling at the University of Granada (2019-present). He is also a Senior Research Scientist affiliated with the Centre for Information and Communication Technologies of the University of Granada (CITIC-UGR). He is a Research Collaborator at the University of Twente (Netherlands, 2018-present). He is a former Assistant Professor of Creative Technology and a Telemedicine Research Scientist at University of Twente (Netherlands, 2016-2018). There, he worked with the Biomedical Signal and Systems Group (BSS), the Centre for Telematics and Information Technology (CTIT), the Research Centre for Biomedical Technology and Technical Medicine (MIRA), and the Centre for Monitoring and Coaching (CMC).

**-Antonio Benítez**, Full Stack freelance developer (Spain):

He studied Computer Engineering and specialized in Software Engineering at the School of Computer and Telecommunications Engineering of the University of Granada. He has been investigating Natural Language Processing, Dialogue Systems and Artificial Intelligence since 2016. He has completed research in the crossroads of computer science and mental health as a secondee of the MENHIR project in Action Mental Health in 2019.

**-Raymond Bond**, Ulster University (Northern Ireland, UK):

He has research interests at Ulster University within biomedical and healthcare informatics, which is the application of digital technology in healthcare. His work has involved health data analytics as well as the modelling, processing and visualisation of medical data to enhance clinical decision-making including the creation of decision support systems. He also has research interests in computerised simulation-based training in healthcare, usability engineering methods to improve medical devices, eye-gaze analytics in decision science, and is also involved in developing computer-based models for healthcare monitoring and interventions. He initiated a UX-Lab which is an outlet for transferring usability engineering knowledge to the medical device industry and other industries.

**-Zoraida Callejas**, Dept. Lenguajes y Sistemas Informáticos, University of Granada (Spain):

Associate Professor in the Department of Software Engineering at the Technical School of Computer Science and Telecommunications of the University of Granada (Spain). She is the Project Manager of the H2020-MSCA RISE project MENHIR about conversational systems for mental health, and the Bon-Appetit regional project, that uses e-coaches to foster the acquisition of healthy activity and nutritional habits by children. Her research focus is on affective dialogue systems and conversational interfaces.

**-Chloé Clavel**, LTCI, Telecom-Paris, Institut Polytechnique de Paris (France):

Professor in Affective Computing at LTCI, Telecom-Paris, Institut Polytechnique de Paris (S2A team), where she coordinates the Social Computing topic and within the GRETA Team. After her PhD, she worked in the laboratories of two big French companies that are Thales Research and Technology and EDF R&D where I developed my research around audio and text mining applications. Her research work deals with interactions between humans and virtual agents, from user's socio-emotional behavior analysis to socio-affective interaction strategies with a focus on speech and language processing.

**-Gennaro Cordasco**, Università degli studi della Campania Luigi Vanvitelli (Italy):

Laurea degree (cum laude) in "Informatica" (Computer Science) from University of Salerno (Italy) in 2002. From 2002 to 2006, he attended the PhD Program in Computer Science at Dipartimento di Informatica ed Applicazioni at the University of Salerno (ITALY) (Advisor: Prof. Alberto Negro). From March 2011 he is Assistant Professor (Ricercatore) at the Dipartimento di Psicologia of the Università degli studi della Campania "Luigi Vanvitelli" (Italy) and an Affiliate of the International Institute for Advanced Scientific Studies, Vietri sul Mare, Italy. His research interests focus on Distributed Algorithms, Peer-to-Peer (P2P) Systems, Small World Networks and Internet-based Computing, Information diffusion in Networks, Agent based simulations and optimization, Handwriting analysis, Emotion recognition.

**-Edel Ennis**, Ulster University (Northern Ireland, UK):

Lecturer in Psychology at Ulster University since 2006. She was Lecturer in Psychology at the University of Portsmouth from 2000 to 2006.

**-Anna Esposito**, Università degli studi della Campania Luigi Vanvitelli (Italy):

Associate Professor, PhD, Università della Campania "Luigi Vanvitelli", Dipartimento di Psicologia. Researcher at the EU project on "Empathic, Expressive, Advanced Virtual Coach to Improve Independent Healthy-Life-Years of the Elderly (EMPHATIC)", EU COST Action CA15218 "Measuring homelessness in Europe", EU COST Action IS1406 "Enhancing Children's Oral Language Skills across Europe and Beyond: A Collaboration Focusing upon Interventions for Children with Difficulties Learning Their First Language. She is a member of REPRISE: Register of Expert Peer Reviewers for Italian Scientific Evaluation, Expert pools for the European Cooperation in Science and Technology (ESF), AI\*IA Italian Association for Artificial Intelligence (Associazione Italiana per l'Intelligenza Artificiale), Italian List of Expert (Elenco Idonei Esperti della Valutazione Profilo Esperti Disciplinari) ANVUR (Italian National Agency for the Evaluation of Universities and Research Institutes), directive Counsel of the SIREN with treasurer functions, European Science Foundation (ESF) College of Expert Reviewers, Italian Association SIREN (Società Italiana Reti Neuroniche), European Network of Excellence in Human Language Technologies (ELSENET), Institute of Electrical and Electronics Engineers (IEEE), and International European Speech Communication Association (ISCA).

**-David Griol**, Dept. Lenguajes y Sistemas Informáticos, University of Granada (Spain):

Associate Professor at the University of Granada and member of the Technical Office of the Spanish Plan for the Advancement of Language Technology (Ministry of Economic Affairs and Digital Transformation). He has participated in several European and Spanish projects related to natural language processing, speech technologies and conversational interfaces. His research activities are mostly related to the development of statistical methodologies for the design of spoken dialog systems.

**-Luis Gutiérrez-Rojas**, Dpto. de Psiquiatría, University of Granada & Andalusian Public Health Service (Spain):

Fuente: [https://escuelaposgrado.ugr.es/doctorado/escuelas/escuelasdeverano/2020/idss-2020/ehealth\\_2020/index](https://escuelaposgrado.ugr.es/doctorado/escuelas/escuelasdeverano/2020/idss-2020/ehealth_2020/index)

Bachelor of Medicine and Surgery, University of Navarra. Specialist in Psychiatry at the Jaén Hospital Complex. Doctor of Psychiatry from the University of Granada. Degree of Doctor cum laude. Extraordinary Doctorate Award (Granada, 2011). He currently works as a clinical professional specialized in Psychiatry in the Health Technology Park of Granada. Member of the Spanish Society of Biological Psychiatry. President of the Andalusian Group for the Study of Bipolar Disorder (GETBA) ([www.getba.es](http://www.getba.es)). Founding partner of the Human Speakers conference agency ([www.humanspeakers.net](http://www.humanspeakers.net)). Master's Degree in Psychopathology and Health by the UNED. Master's Degree in Clinical Trials by the University of Seville.

**-Matthias Kraus**, Ulm University (Germany):

PhD student at Ulm University. His research interests include Proactive Dialogue System Management, Multimodal Dialogue Systems, Multi-Domain Dialogue Management, Cognitive Companion Systems, Human-Computer Trust, and Statistical Dialogue Modelling. He has participated in 4 national and EU projects related to these research areas.

**-Michael F. McTear**, Ulster University (Northern Ireland, UK):

Michael McTear is Emeritus Professor at the University of Ulster with a special research interest in spoken language technologies. He graduated in German Language and Literature from Queens University Belfast in 1965, was awarded MA in Linguistics at University of Essex in 1975, and a Ph.D. at the University of Ulster in 1981. He has been a Visiting Professor at the University of Hawaii (1986–1987), the University of Koblenz, Germany (1994–1995), and University of Granada, Spain (2006–2010). He has been researching in the field of spoken dialog systems for more than 15 years and is the author of the widely used textbook *Spoken dialogue technology: toward the conversational user interface* (Springer, 2004). He also is a coauthor (with Kristiina Jokinen) of the book *Spoken Dialogue Systems*, (Morgan and Claypool, 2010), and (with Zoraida Callejas) of the book *Voice Application Development for Android* (Packt Publishing, 2013).

**-Maurice Mulvenna**, Ulster University (Northern Ireland, UK):

Maurice Mulvenna is Professor of Computer Science at Ulster University. His research areas include computing and mental health, artificial intelligence, digital wellbeing, innovation and assistive technologies. He has been principal investigator on around 50% of over 150 international research projects. Arising from his research, he has published over 400 papers and served on numerous program committees. He was co-chair of the 32nd British Human-Computer Interaction conference in 2018, and co-chair of both the 31st European Cognitive Ergonomics Conference (ECCE-2019) and the 5th IEEE International Conference on Internet of People (IoP-2019) in 2019.

**-Siobhan O'Neill**, Ulster University (Northern Ireland, UK):

Siobhan O'Neill is a Professor of Mental Health Sciences at Ulster University. Her current research programmes focus on trauma and suicidal behaviour in Northern Ireland (NI) and novel interventions for mental health and suicidal behaviour. Prior to joining Ulster University in 2000, she completed a degree in psychology at the Queen's University of Belfast and a masters in health psychology at NUI Galway. She also worked as a Public Health Researcher, conducting evaluations of health services and users' experience. Siobhan is a member of the World Mental Health Survey Consortium, a Director of the Irish Association of Suicidology and Youthlife, and an advisor to several organisations who provide services and interventions for mental health and suicide prevention and sits on several national and international research committees. She has over 70 publications in peer-reviewed journals, including several ground breaking studies of mental health and suicidal behaviour in Northern Ireland. She is part of the World Mental Health Gender and Mental-Physical Comorbidity workgroups and led the world mental health paper linking mental illness with the subsequent development of cancer.

**-Satoshi Nakamura**, Nara Institute of Science and Technology (Nara, Japan):

Dr. Satoshi Nakamura is a Professor of Nara Institute of Science and Technology (NAIST), Team Leader of Riken AIP, Honorary professor of Karlsruhe Institute of Technology, Germany. He received his B.S. from Kyoto Institute of Technology in 1981 and Ph.D. from Kyoto University in 1992. He was an Associate Professor of the Graduate School of Information Science at NAIST in 1994-2000. He was the Department head and Director of ATR Spoken Language Communication Research Laboratories in 2000-2004, and 2005-2008, respectively, and Vice president of ATR in 2007-2008. He was Director-General of Keihanna Research Laboratories and the Executive Director of Knowledge-Creating Communication Research Center, National Institute of Information and Communications Technology, Japan in 2009-2010. He is currently Director of the Data Science Center and a full professor of Information Science Division, Graduate School of Science and Technology of NAIST, and Team Leader of the Tourism Information Analytics Team at Center for Advanced Intelligence Project (AIP), RIKEN, Japan. His research interests include modeling and systems of speech processing, spoken dialog systems, natural language processing, and big data analytics. He is one of the world leaders of speech-to-speech translation research and has been serving various speech-to-speech translation research projects. He was a committee member of IEEE SLTC in 2016-2018, Elected Board Member of International Speech Communication Association, ISCA in 2011-2019. He received Antonio Zampolli Prize in 2012 and retained the title of ATR Fellow, IPSJ Fellow, and IEEE Fellow.

**-Elisabetta Patron**, University of Padova (Italy):

PhD student at University of Padova (Italy). She has published more than 25 papers at international journal and conferences related to depressive symptoms, anxiety, heart rate variability, and psychophysical well-being.

**-Marta Rivera**, Dept. Psicología Experimental, University of Granada (Spain):

PhD student at the University of Granada since 2007, previously an intern in the University of Strathclyde at the School of Psychological Sciences and Health. She is researching in Experimental Psychology, Neuropsychology and Cognitive Psychology, the topic of her PhD is in second language acquisition and individual differences.

**-Ángel Ruiz-Zafra**, University of Cádiz (Spain):

Computer Engineer and PhD from the University of Granada. He has developed software systems through a grant-contract linked to research projects in e-Health. His main research interest is focused on architectures for Cloud-based e-Health systems and mobile platforms.

**-María Inés Torres**, University of the Basque Country (Spain):

PhD in Physical Sciences from the University of the Basque Country in 1990. She is Full Professor of Languages and Computer Systems at this university. She has been a member of the direction of the Spanish Association for the Recognition of Forms and Image Analysis from 1995 to 2008. She founded the research group on Speech Recognition and Technologies in 1990 and has been the director since then. María Inés Torres is

coordinator of the EMPATHIC project Expressive, Advanced Virtual Coach to Improve Independent Healthy-Life-Years of the Elderly H2020-grant 769872 Call SC1-PM-15-2017 RIA, in which ten partners from seven countries participate (Nov 2017-Nov 2020) and leads the participation of the UPV /EHU in the action H2020-MSCA-RISE2018 grant 823907 Mental MENHIR health monitoring through interactive conversations, in which seven partners from four European countries participate.

-**Nicolas Wagner**, Ulm University (Germany):

PhD student at Ulm University. His research interests include Multi-User Dialogue Management, Multimodal Dialogue Systems, and Statistical Dialogue Management.

## Organizing Committee

### General Chair:

-Zoraida Callejas, University of Granada (Spain)

-Wolfgang Minker, Ulm University (Germany)

-David Babington, Action Mental Health (United Kingdom)

### Training Program Chair:

-David Griol, University of Granada (Spain)

-Kawtar Benghazi, University of Granada (Spain)

-Manuel Noguera, University of Granada (Spain)

-Ángel Ruiz-Zafra, University of Cádiz (Spain)

## Who can attend?

It is intended for psychology, health, social work, and computer science students. The speakers are also from different disciplines including: psychology, psychiatry, computer science, telecommunications and social work.

## Schedule

<https://menhir-project.eu/index.php/summer-school-programme/>

## Proceeding and Registration

**From 7th to 30th September**

Maximum number of participants: 20

<b>MENHIR MEMBER REGISTRATION: 0€ FOR ESRS WHO HAVE BEEN OR PLAN TO BE ON SECONDMENT FOR THE MENHIR PROJECT</b>
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<b>REDUCED REGISTRATION FOR STUDENTS OF THE INSTITUTIONS OF ARQUS ALLIANCE AND THE MENHIR PROJECT : 80€</b>
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ARQUS: universities of Bergen, Granada, Graz, Leipzig, Lyon, Padova and Vilnius.
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MENHIR: universities of Basque Country, Campania “Luigi Vanvitelli”, Granada, Ulster; and Action Mental Health, Intelligent Voice and GLOBIT.
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<b>STANDARD REGISTRATION: 150€</b>
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<https://menhir-project.eu/index.php/summer-school-registration/>