

DAVID MELHART

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SENIOR AI PLATFORM ENGINEER • POSTDOCTORAL AI RESEARCHER

Education

Game Research - Philosophiae Doctor **2017 - 2022**
Institute of Digital Games, University of Malta Msida, Malta
Supervisors: Professor Georgios N Yannakakis & Dr Antonios Liapis
Thesis title: "The Anatomy of Gameplay: General Affect Prediction Across Games and Genres"

Cognition & Communication - Master of Arts **2013 - 2016**
University of Copenhagen Copenhagen, Denmark
Supervisor: Andreas Lindegaard Gregersen, PhD
Thesis title: "Frustration and Adaptation"

Communication & Media Theory - BA Supplementary Studies **2012-2013**
Corvinus University of Budapest Budapest, Hungary

Political Science - Bachelor of Arts **2008-2012**
Pazmany Peter Catholic University Piliscsaba, Hungary
Supervisor: Professor Balázs Zoltán
Thesis title: "Legitimacy Crisis of the European Union"

Additional Course Work

Computer Vision and Machine Intelligence **2018**
VISUM Summer School Porto, Portugal

Artificial Intelligence and Games **2018**
1st International Summer School on Artificial Intelligence and Games Chania, Greece

Multidisciplinary Game Research **2016**
Utrecht University Summer School Utrecht, The Netherlands

Academic Experience

Lecturing

Player Modeling: From Game Analytics to Affective Computing course at IDG, University of Malta

MSc Student Supervision **2017-2023**

Output: Introduction to Annotation and focus on Preference Learning **2020-2022**

Input: Emotion Elicitation and Sensing **2018-2022**

Tutorial on Physiological Sensors and Feature Extraction with Cameras **2018-2021**

Tutorial on Preference Learning **2018-2021**

Emotion elicitation and annotation **2017**

Sensing for Emotion Detection **2017**

Tutorial on Physiological sensors **2017**

Tutorial on Feature extraction with cameras **2017**

Game AI course at IDG, University of Malta
MSc Student Supervision 2019-2023
Tutorial on Monte-Carlo Tree Search 2019-2022
Tutorial on Genetic Algorithms 2021

Methods for Games Research course at IDG, University of Malta
Qualitative Game Research Methodology 2017-2022

Editorial Experience

Editorial Assistant 2022-2023
IEEE Transactions on Games
Review Editor 2022-2023
Frontiers in Human-Media Interaction
Guest Associate Editor 2022
User States in Extended Reality Media Experiences for Entertainment Games
Special Issue of Frontiers in Virtual Reality and Human Behaviour

Reviewer Experience

Artificial Intelligence and Interactive Digital Entertainment Conference
CHI-Play
Frontiers in Human-Media Interaction
Hellenic Conference on Artificial Intelligence
Human-Habitat for Health @ AMC International Conference on Multimodal Interaction
IEEE Conference on Games
IEEE Conference on Computational Intelligence and Games
IEEE Transactions on Affective Computing
IEEE Transactions on Computational Intelligence and AI in Games
IEEE Transactions on Games
International Conference on Affective Computing & Intelligent Interaction
International Conference on the Foundations of Digital Games
International Journal of Human-Computer Interaction
#gamesUR EU - Games User Research Conference
Press Start

Publications

Journal Article

Melhart, D., Liapis, A., & Yannakakis, G. N. (2022). **The arousal video game annotation (AGAIN) dataset.** *IEEE Transactions on Affective Computing*, 13(4), 2171-2184.

Papavlasopoulou, S., Sharma, K., Melhart, D., Schellekens, J., Lee-Cultura, S., Giannakos, M. N., & Yiannakakis, G. N. (2021). **Investigating gaze interaction to support children's gameplay.** *International Journal of Child-Computer Interaction*, 30, 100349.

Melhart, D., Yannakakis, G. N., & Liapis, A. (2020). **I Feel I Feel You: A theory of Mind Experiment in Games.** *KI-Künstliche Intelligenz*, 34, 45-55.

Melhart D. (2018). **Towards a Comprehensive Model of Mediating Frustration in Videogames.** *Game Studies: The International Journal of Computer Game Research*, 18(1). ISSN:1604-7982.

Melhart D., & Jiwandono H. P. (2018). **The Infectious Aesthetic of Zombies: An Exploration of Zombie Narratives and Unit Operations of Zombies in Videogames.** *Acta Ludologica*, 1(1). ISSN: 2585-8599.

Conference

Mavromoustakos-Blom, P., Melhart, D., Liapis, A., Yannakakis, G. N., Bakkes, S., & Spronck, P. (2023). **Multiplayer Tension In the Wild: A Hearthstone Case.** *Proceedings of the 18th International Conference on the Foundations of Digital Games (FDG)*, Lisbon, Portugal.

Melhart, D., Liapis, A., & Yannakakis, G. N. (2021). **Towards General Models of Player Experience: A Study Within Genres.** In *Proceedings of the IEEE Conference on Games (IEEE CoG)* Copenhagen, Denmark

Makantasis, K., Melhart, D., Liapis, A., & Yannakakis, G. N. (2021). **Privileged Information for Modeling Affect in the Wild.** In *2021 9th International Conference on Affective Computing and Intelligent Interaction (ACII)*, Virtual Event.

Pacheco, C., Melhart, D., Liapis, A., Yannakakis, G. N., & Perez-Liebana, D. (2021). **Trace it like you believe it: Time-continuous believability prediction.** In *2021 9th International Conference on Affective Computing and Intelligent Interaction (ACII)*, Virtual Event.

Melhart, D., Gravina, D., & Yannakakis, G. N. (2020). **Moment-to-moment Engagement Prediction through the Eyes of the Observer: PUBG Streaming on Twitch.** In *Proceedings of the 15th International Conference on the Foundations of Digital Games (FDG)*, Buggiba, Malta

Melhart D., Liapis A. & Yannakakis G. N. (2019). **PAGAN: Video Affect Annotation Made Easy.** In *Proceedings of the 8th International Conference on Affective Computing and Intelligent Interaction (ACII)*, Cambridge, United Kingdom.

Camilleri E., Yannakakis G. N. Melhart D. & Liapis A. (2019). **PyPLT: Python Preference Learning Toolbox.** In *Proceedings of the 8th International Conference on Affective Computing and Intelligent Interaction (ACII)*, Cambridge, United Kingdom.

Melhart D., Azadvar A., Canossa A., Liapis A. & Yannakakis G. N. (2019). **Your Gameplay Says it All: Modelling Motivation in Tom Clancy's The Division.** In *Proceedings of the IEEE Conference on Games (IEEE CoG)*, London, United Kingdom.

Prager R. P., Troost L., Brüggjenjürgen S., Melhart D., Yannakakis G. N., & Preuss M. (2019). **An Experiment on Game Facet Combination.** In *Proceedings of the IEEE Conference on Games (IEEE CoG)*, London, United Kingdom.

Melhart D., & Jiwandono H. P. (2017). **The Infectious Aesthetic of Zombies - An Exploration of Zombie Narratives and Unit Operations of Zombie-Like Entities.** In *Abstract Proceedings of the Central and Eastern European Game Studies Conference*, ISBN 978-80-8105-873-8. Trnava, Slovak Republic.

Melhart D. (2016). **Frustration and Adaptation: Orientational Shifts in Motivation.** Presented at *1st International Conference of DiGRA and FDG*. Dundee, Scotland, UK.

Tutorial

Lopes P., Melhart D. (2021). **Player Modelling through Affective Computing**. Presented at the 2022 IEEE Conference on Games (IEEE CoG), Beijing, China (Virtual).

Workshop

Melhart D., Konstantios S., Giannakakis G., Yannakakis G. N. & Liapis A. (2020). **A Study on Affect Model Validity: Nominal vs Ordinal Labels**. Presented at 2018 International Joint Conference on Artificial Intelligence, Stockholm, Sweden. Published in *Proceedings of Machine Learning Research*, 86. ISSN: 1938-7228.

Demo

Pacheco, C., Melhart, D., Liapis, A., Yannakakis, G. N., & Perez-Liebana, D. (2021). **Discrete versus Ordinal Time-Continuous Believability Assessment**. In *2021 9th International Conference on Affective Computing and Intelligent Interaction Workshops and Demos (ACIIW)*, Virtual Event.

Melhart D., Liapis A. & Yannakakis G. N. (2019). **PAGAN: Platform for Audiovisual General-purpose ANnotation**. In *Proceedings of the 8th International Conference on Affective Computing and Intelligent Interaction (ACII)*, Cambridge, United Kingdom.

Thesis

Melhart D. (2021). **The anatomy of gameplay: general affect prediction across games and genres**. Doctor of Philosophy Dissertation. Msida, Malta.

Melhart D. (2016). **Frustration and Adaptation: A Prototypical Model of Orientational Shifts in Situational Motivation during Videogame Play**. Master of Arts Thesis. Copenhagen, Denmark.

Patent

Yannakakis, G. N., Pedersen, C. H., Melhart, D., & Henriksen, L. (2022). **User experience modeling for gaming applications**. U.S. Patent No. 11,325,048. Washington, DC: U.S. Patent and Trademark Office.

Professional Experience

Senior Member of Technical Staff (Plafrom) modl.ai	in progress since 2022 Msida, Malta/Copenhagen, Denmark
AI Researcher modl.ai	2021-2022 Msida, Malta/Copenhagen, Denmark
AI Research Consultant modl.ai	2019-2021 Msida, Malta/Copenhagen, Denmark
Postdoctoral Researcher Institute of Digital Games, University of Malta	in progress since 2022 Msida, Malta
Research Support Officer Institute of Digital Games, University of Malta	in progress since 2017 Msida, Malta

Game Designer & UX Specialist **first half of 2017**
benchmarked.games Budapest, Hungary

Online Team Guide **2015**
Udacity Mountain View, California, US

Director & Lead Designer **2013-2015**
WireMind Ltd. Copenhagen, Denmark

Organisational Experience

5th International Summer School on Artificial Intelligence and Games **2023**
Member of the Organizing Committee and Publicity Chair

18th Conference on the Foundations of Digital Games **2023**
Member of the Organizing Committee, Workshop & Panels Chair

17th Conference on the Foundations of Digital Games **2022**
Member of the Organizing Committee and Website Chair

4th International Summer School on Artificial Intelligence and Games **2022**
Head of Staff, Online and Local Organizer, and Publicity Chair

15th Conference on the Foundations of Digital Games **2020**
Communication Chair

3rd International Summer School on Artificial Intelligence and Games **2021**
Webmaster, Online Organizer, and Publicity Chair

Games And Learning Alliance Conference **2019**
Communication & Promotion Chair

IEEE Conference on Games **2019**
Member of the Program Committee for the Game Design, Analysis & Player Modelling, Demo, and Short Paper Tracks

2nd International Summer School on Artificial Intelligence and Games **2019**
Webmaster, Online Organizer, and Publicity Chair

19th EPIA Conference on Artificial Intelligence - AI for Games (AI4G) Track **2019**
Member of the Program Committee

Malta Global GameJam **2019-2023**
Member of the Organising Committee, Art Direction, Web Management

FDG2018 - 1st Workshop on Tabletop Games **2018**
Web Design and Management

1st International Summer School on Artificial Intelligence and Games **2018**
Web Designer, Webmaster, Social Media Manager, Online & Local Organiser

Malta Global GameJam 2018
Volunteer Social Media Manager & Local Organiser

Awards

IEEE Conference on Games – Best Paper Award 2021

Nominated

Melhart, D., Liapis, A., & Yannakakis, G. N. (2021). Towards General Models of Player Experience: A Study Within Genres. *In Proceedings of the IEEE Conference on Games (IEEE CoG) Copenhagen, Denmark*

IEEE Conference on Games – Short Video Competition 2019

3rd Place

Team: David Melhart, Jasper Schellekens, Ahmad Azadvar, Alessandro Canossa, Antonios Liapis, Georgios N. Yannakakis

1st International Summer School on Artificial Intelligence and Games – Game AI Jam 2018

Best by Popular Vote

Role: Graphic Designer

Team: Alberto Alvarez, Gaël Delalleau, Olivier Delalleau, David Melhart, Dominik Scherer

Multidisciplinary Game Research Summer School - JavaScript Game Workshop 2016

Best Game Design and Implementation

Role: Team Lead, Project Management, Game Design, Graphic Design, and JavaScript Development

Team: Carlos Abel Garcia, Haryo Pambuko Jiwandono, David Melhart, Jose Perez-parras Toledano

Memberships

Institute of Electrical and Electronics Engineers since 2019

Association for the Advancement of Affective Computing since 2019

Digital Games Research Association 2016-2017

Technical Skills

Languages

Python, C#, Java, JavaScript, PHP, MySQL HTML, CSS

Adobe Suite

Photoshop, InDesign, Illustrator

Game Engine

Unity 3D

References

Prof Georgios Yannakakis **PhD Supervisor**
Professor and Director of the Institute of Digital Games
Institute of Digital Games, University of Malta
georgios.yannakakis@um.edu.mt

Dr Antonios Liapis **PhD Supervisor**
Lecturer in Procedural Content Generation, Computational Creativity, and Game Development
Institute of Digital Games, University of Malta
antonios.liapis@um.edu.mt

Dr Christoffer Holmgård **Professional Reference**
Co-Founder and CEO
modl.ai
christoffer@modl.ai

Dr Sonia Fizek **Academic Reference**
Lecturer in Game Design and Theory
Division of Games and Arts, School of Arts, Media & Computer Games, Abertay University
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Andreas Lindegaard Gregersen, PhD **Master's Thesis Supervisor**
Associate Professor and Coordinator of Cognition & Communication
Department of Media, Cognition & Communication, Faculty of Humanities, University of Copenhagen
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