# Deniz Mevlevioglu

## PhD Candidate

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## Profile

I'm a Computer Science PhD candidate at University College Cork, researching real-time anxiety classification in Virtual Reality Exposure Therapy. My research interests include on-body physiological sensors, machine learning, and virtual reality. Experienced tutor and demonstrator for varying topics in Computer Science, such as web development, authoring and 3D modelling.

## Skills

- Academic Research
- Software Development
- Game Development
- Teaching
- Web Development

## Interests

- Human-Computer Interaction
- Virtual Reality
- Smart Health
- Biosensors
- Machine Learning

## Programming Languages

- C#
- Python
- Java
- JS

## Languages

- English (Full Professional Proficiency)
- Turkish (Native)

## Technologies

- Keras
- TensorFlow
- SKLearn
- Pytorch
- SPSS
- Unity
- Blender
- Three.js
- Git
- Linux

# Publications

**Real-time Classification of Anxiety in Virtual Reality Therapy Using Biosensors and a Convolutional Neural Network.**
Deniz Mevlevioğlu, Sabin Tabirca, and David Murphy. 2024.
*MDPI Biosensors 14 (3)*
**DOI**: 10.3390/bios14030131

**Anxiety Classification in Virtual Reality Using Biosensors: A Mini Scoping Review.**
Deniz Mevlevioğlu, Sabin Tabirca, and David Murphy. 2023.
*PLoS One 18 (7)*
**DOI**: 10.1371/journal.pone.0287984

**Emotional Virtual Reality Stroop Task**
*Deniz Mevlevioğlu, Sabin Tabirca, and David Murphy. 2023.*
*IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops)*
**DOI:** 10.1109/PerComWorkshops56833.2023.10150350

**Emotional Virtual Reality Stroop Task: an Immersive Cognitive Test**
Deniz Mevlevioğlu, Sabin Tabirca, and David Murphy. 2022.
*In Proceedings of the ACM International Conference on Interactive Media Experiences (IMX '22).*
**DOI:** 10.1145/3505284.3532988

**Real-time Anxiety Prediction in Virtual Reality Therapy.**
Deniz Mevlevioğlu, Sabin Tabirca, and David Murphy. 2021.
*Proceedings of the 12th ACM Multimedia Systems Conference (MMSys '22).*
**DOI**: 10.1145/3524273.3533926

**Emotional Virtual Reality Stroop Task: Pilot Design.**
Deniz Mevlevioğlu, Sabin Tabirca, and David Murphy. 2021.
*In Proceedings of the 27th ACM Symposium on Virtual Reality Software and Technology (VRST '21).*
**DOI**: 10.1145/3489849.3489952

**Visual Respiratory Feedback in Virtual Reality Exposure Therapy: A Pilot Study.**
Deniz Mevlevioğlu, Sabin Tabirca, and David Murphy. 2021.
*In Proceedings of the ACM International Conference on Interactive Media Experiences (IMX '21).*
**DOI**: 10.1145/3452918.3458799

**Real-time Anxiety Prediction in Virtual Reality Exposure Therapy.**
Deniz Mevlevioğlu, David Murphy, and Sabin Tabirca. 2021.
*In Adjunct Proceedings of the ACM International Conference on Interactive Media Experiences (IMX '21).*
**DOI:** 10.6084/m9.figshare.14699751.v1

# Education

### PhD in Computer Science
University College Cork

*2020 - 2024*

- Thesis Title: *"Real-time Anxiety Classification in Virtual Reality Exposure Therapy"*

### Msc In Interactive Media (Computer Science)
University College Cork

*2018 - 2019*

- Thesis Title: "Visual Respiratory Feedback in Virtual Reality Exposure Therapy"
- 1:1 Honours

### BA in Psychology
Bahcesehir University

2018 - 2019

- 74/100 GPA

# Other Education

### Epigeum Research Integrity
Oxford University Press

*2020*

### Pedagogical Formation
Marmara University

*2018*

# Work Experience

**Demonstrator**
University College Cork, School of Computer Science and Information Technology
*September 2019 to Present*
Responsibilities:

- Demonstrated for practical sessions to a class of approximately 40 MSc students
- Presented over five tutorials per semester on computer science topics
- Guided students through problem-solving to improve their programming skills

Skills and technologies:

*Virtual Reality • Python • Java • HTML • CSS • JavaScript • PHP • Blender •jQuery • three.js • WebGL • Teaching*

**Visiting Researcher**
University of Virginia, Link Lab
*June 2023 to September 2023*
Responsibilities:

- Designed and carried out the research project entitled "Interpersonal synchrony of socially anxious dyads during Zoom video calls".
- Made presentations about my research to the team
- Collaborated with a team of psychologists and engineers

Skills and technologies:

*Python • Biosensors • R • Project Management • Collaboration*

**Tutor**
University College Cork, Munster Programming Training
*June 2019 to June 2023*
Responsibilities:

- Delivered lectures that enabled over 60 secondary students to be proficient in creating the front-end and back-end of their personal websites from scratch
- Provided hands-on exercises each week based on the students' levels
- Created and graded assignments

Skills and technologies:

*HTML • CSS • JavaScript • PHP • SQL • MySQL • Apache • Teaching • Communication*

**Web Developer**
Freelance
*June 2019 to October 2020*
Responsibilities:

- Designed and developed personal and e-commerce websites
- Came up with dynamic solutions based on customer needs
- Worked with a team of designers and developers
- Made sure the websites follow accessibility standards
- Provided SEO

Skills and technologies:

*HTML • CSS • JavaScript • PHP • WordPress • SEO • Development*

**Tutor**
University College Cork, School of Arts and Humanities
*June 2019 to June 2023*
Responsibilities:

- Prepared and delivered tutorials to a class of 40 BA students about creating a personal website using WordPress
- Created hands-on exercises to analyse their skills and needs
- Introduced and familiarised students with technologies useful for academia

Skills and technologies:

*Teaching • HTML • CSS • WordPress • Communication*

**Intern School Counselor**
Feridun Tumer Technical Anatolian Secondary School
*January 2017 to June 2017*
Responsibilities:

- Made a year-long education plan after assessing student needs
- Held introductory seminars to students and employees, providing information about counselling
- Created individualised education programs for students with special needs

Skills and technologies:

*Teaching • Counselling • Communication*

# Activities

### Guest Lecturer
University College Cork, School of Computer Science and Information Technology
*2022-2023*
- Prepared and delivered a guest lecture with the topic "Using Python for Scripting in Blender" to approximately forty postgraduate students

### Ireland Team Lead
European Girls' Olympiads of Informatics
*2022*
- Represented the Irish Team in the European Girls' Olympiad in Informatics as a team lead. Our team came back with a bronze medal.

### Project Advisor
University College Cork, School of Computer Science and Information Technology
*2022*
- Supervised two Master's projects in the field of Computer Science, Human-Computer Interaction and Virtual Reality

### Student Volunteer Chair
ACM International Conference on Interactive Media Experiences (IMX)
*2022*
- Directed and monitored a team of student volunteers to aid hundreds of participants for ACM IMX 2022, the leading international conference for interactive media experiences held in Aveiro, Portugal and virtually

### Academic Speaker
NBT Berlin - International Forum on Neural Engineering & Brain Technologies
*2022*
- Presented my work titled 'Real-time anxiety prediction in Virtual Reality' to more than a hundred people in Berlin

### Panellist
SFI Advance CRT Research Colloquium
*2022*
- Organised and presented student contributions in the SFI ADVANCE research colloquium held in Dublin

### Competitor - Team XHalers
VR4Rehab Competition
*2021*
- Collaborated with a team of physiotherapists, nurses, physicians and computer scientists to design and prototype "Short games for long covid"; a VR application for aiding in the management of long-covid symptoms for the VR4Rehab hackathon by Interreg, held virtually

# Projects

### Emotional Virtual Reality Stroop Task (eVRST)

An emotional Virtual Reality variant of the well-established cognitive test Stroop
Colour-Word Task.
Technologies:
*Unity • C# • Shimmer GSR • Myndplay Myndband • GIMP • Audacity*

### Visual Respiratory Feedback in Virtual Reality Exposure Therapy

An experience that lets the user experience height in the comfort of VR, incorporating
physiological signals and respiratory biofeedback.
Technologies:
*Unity • C# • Shimmer • Myndplay • Reaper*

### Real-time Anxiety Classification in Virtual Reality Exposure Therapy

A decision-support system in VR therapy that uses heart rate, skin conductance and
brain activity for seamless, objective feedback.
Technologies:
*Unity • C# • Shimmer GSR • Myndplay Myndband • GIMP • Audacity*

### Discord LLM Chatbots

Two chatbots that are capable of processing text and responding in a meaningful way.
"Llan" is programmed using the discord.js library and GPT-3 API. It is good at answering
general questions and creative tasks such as making ASCII art and writing poems.
The second one, "Denizbot", is programmed using pycord library and GPT-J models. It
is fine-tuned using LORA to speak similarly to its creator, me.
Technologies:
*JS • Python • GPT-3 • GPT-J • node.js • discord.js • pycord*

### ooOoOo

A short and fun game where you play as a small ball rolling around and getting bigger
by consuming enemies smaller in size and shooting enemies bigger in size.
Technologies:
*Unity • C# • Shimmer GSR • Myndplay Myndband • GIMP • Audacity*