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Pembe Gizem **Özdil**

Education

Sept 2020–25 (*expected*) **Swiss Federal Institute of Technology Lausanne (EPFL)** *Switzerland*
Ph.D. candidate in Robotics
- Coursework: Dynamical System Theory for Engineers, Biological Modeling of Neural Networks, Scientific Programming for Engineers

August 2020 **Boğaziçi University** *Turkey*
B.Sc. in Electrical and Electronics Engineering and Double Major in Mathematics
- Thesis: Fine Localization Using Topological Spatial Cognition Model in Mobile Robots
  Supervisor: Prof. H. Işıl Bozma
- Graduated with High Honors
- Minor in Film Studies

Spring 2019 **Queen's University** *Canada*
International Exchange Program, Term GPA: 3.75/4.00

Research experience

2020–*present* **Swiss Federal Institute of Technology Lausanne (EPFL)** *Switzerland*
Doctoral Researcher under Prof. Pavan Ramdya and Prof. Auke Ijspeert
- Experimentally investigating *Drosophila* goal-directed limb movement using optogenetics, behavioral assays, 3D pose estimation, and behavior analysis.
- Modeling the nervous system using biological neural networks, deep learning, and physics-based simulations.

2019–2020 **Intelligent Systems Lab, Boğaziçi University** *Turkey*
Undergraduate Researcher under Prof. H. Işıl Bozma
- Implemented a two-stage approach for fine localization based on Topological Spatial Cognition Model by using the C++ and Robot Operating System (ROS).

Spring 2019 **BioRobotics Laboratory, Queen's University** *Canada*
Undergraduate Researcher under Prof. Keyvan Hashtrudi-Zaad
- Designed a Simulink Model for the setup for determining the uncoupled stability region based on velocity measurement from an analog rate sensor.

Summer 2018 **Media, Vision and Graphics Laboratory, Koç University** *Turkey*
Summer Research Intern under Prof. Engin Erzin
- Improved audio-based emotion recognition from the dyadic conversations in JESTKOD the database by using Convolutional Neural Networks and other regression types.
- Designed a novel interface for affective state estimation and annotation from speech.

Summer 2017 **Optical Tweezers Laboratory, University College London** *United Kingdom*
Summer Research Intern under Prof. Philip Jones
- Analyzed and simulated Brownian Motion of free and trapped particles obtained from various sample types such as solid spheres, air bubbles, and microemulsions.

Honors & Awards

2023–*present* Google Ph.D. Fellowship ($80,000 per year up to 3 years)

2023 Travel grants for *Simulated Bodies* and *Beyond the Connectome* Workshops at Janelia

2021–2023 Swiss Government Excellence Scholarship for Ph.D. ($46,000 per year up to 3 years)

2020 Crossing Paths (NPO), One-time scholarship for grad school applications ($250)

2016–2020 Scholarship Program for Double Major Students with Outstanding Success by *the Scientific and Technological Research Council of Turkey*

2017 Erasmus+ Student Mobility Grant by *the European Commission*

2014–2016 Merit-Based Scholarship Program for Undergraduate Students by *Tekfen Holding*

2014 Ranked 146th among 2.5 million in the nationwide university entrance exam (LYS)

Publications

2023 *NeuroMechFly 2.0, a framework for simulating embodied sensorimotor control in adult Drosophila*
S. Wang-Chen, V.A. Stimpfling, **P.G. Özdil**, L. Genoud, F. Hurtak, P. Ramdya.
bioRxiv, 2023.
DOI: 10.1101/2023.09.18.556649

2022 *NeuroMechFly, a neuromechanical model of adult Drosophila melanogaster*
V.L. Ríos, S.T. Ramalingasetty*, **P.G. Özdil***, J. Arreguit, A.J. Ijspeert, P. Ramdya.
Nature Methods, 2022. (denotes equal contribution)*
DOI: 10.1038/s41592-022-01466-7

2020 *Effect of Direct Velocity Measurement on the Stability of Haptic Simulation Systems*
V.A. Luna Laija, **P.G. Özdil**, K. Hashtrudi-Zaad.
IEEE Haptics Symposium (HAPTICS), USA, 2020.
DOI: 10.1109/HAPTICS45997.2020.ras.HAP20.27.fb93aa04

2019 *A New Interface for Affective State Estimation and Annotation from Speech*
U.Fidan, D.Tomar, **P.G. Özdil**, E.Erzin.
IEEE Signal Processing and Communications Applications Conference (SIU), Turkey, 2019.
DOI: 10.1109/SIU.2019.8806402

Poster Presentations

March, 2024 *The neuromechanical basis for goal-directed antennal grooming through multiple body part coordination*
P.G. Özdil, A.J. Ijspeert, P. Ramdya.
Computational and Systems Neuroscience (COSYNE), Portugal, 2024.

Sept, 2023 *Hill-type muscle modeling of Drosophila front legs in a neuromechanical simulation*
P.G. Özdil*, C. Ning*, J. Phelps, P. Ramdya*, A.J. Ijspeert*.
Simulated Bodies, Janelia Research Campus, the USA, 2023. (denotes equal contribution)*

Sept, 2023 *Reverse-engineering the neural circuitry underlying multi-body part coordination in Drosophila*
P.G. Özdil, A.J. Ijspeert, P. Ramdya.
Beyond the Connectome, Janelia Research Campus, the USA, 2023.

Sept, 2023 *Reverse-engineering the neural circuitry underlying multi-body part coordination in Drosophila*
P.G. Özdil, A.J. Ijspeert, P. Ramdya.
the 67^{th} Benzon Symposium, Bringing Circuits for Movement Together, Denmark, 2023.

Nov, 2022 *A tripartite motor control strategy governing goal-directed reaching in Drosophila*
P.G. Özdil, A.J. Ijspeert, P. Ramdya.
Society for Neuroscience (SfN) Annual Meeting, San Diego, USA, 2022.

Sept, 2022 *Data-driven neuromechanical modeling reveals the contribution of head pitch to goal-directed grooming*
P.G. Özdil, V.L. Ríos, S.T. Ramalingasetty, J. Arreguit, A.J. Ijspeert, P. Ramdya.
EPFL School of Life Sciences Symposium, Switzerland, 2022.

July, 2022 *A tripartite motor control strategy governing goal-directed reaching in Drosophila*
P.G. Özdil, A.J. Ijspeert, P. Ramdya.
Neural Control of Movement (NCM) Annual Meeting, Ireland, 2022.

June, 2021 *Recapitulating Drosophila antennal grooming by combining discrete and rhythmic movement primitives*
P.G. Özdil, V.L. Ríos, S.T. Ramalingasetty, J. Arreguit, A.J. Ijspeert, P. Ramdya
Adaptive Motion of Animals and Machines (AMAM) Symposium, Online, 2021.
Honorable Mention DOI: 10.18910/84873

July, 2019 **Impact of Direct Velocity Measurement on Uncoupled Stability of Haptic Simulation Systems**
V.A. Luna Laija, **P.G. Ozdil**, K. Hashtrudi-Zaad.
IEEE World Haptics Conference (WHC), Japan, 2019.

Talks

Sept, 2023 **Drexel University** *Philadelphia, US*

March, 2023 **Internal Sensorimotor Control Symposium at EPFL** *Switzerland*

Supervision

Fall 2023 **Master Semester Project in Robotics, Louis Gevers**, *EPFL*
Physics-based simulation, modeling

Summer 2023 **ERIP Summer Intern, Julianne Attai**, *EPFL*
Physics-based simulation, machine learning

Spring 2023 **Master's Thesis in Robotics, Chuanfang Ning**, *EPFL*
Physics-based simulation, modeling

Spring 2023 **Master Semester Project in Life Sciences, Clara Scherrer**, *EPFL*
Behavior analysis, machine learning

Fall 2022 **Master Semester Project in Life Sciences, Camille Pescatore**, *EPFL*
Artificial intelligence, machine learning

Fall 2022 **Bachelor Semester Project in Computer Science, Bryan Gotti**, *EPFL*
Physics-based simulations

Fall 2022 **Bachelor Semester Project in Communication Sytems, Timo Achard**, *EPFL*
Physics-based simulation, reinforcement learning

May-Nov 2022 **Research internship, Victor Stimpfling, MSc**, *EPFL*
Physics-based simulation, optimization, neural network modeling

Spring 2022 **Bachelor Semester Project in Life Sciences, Olivia Ruggaber**, *EPFL*
3D pose estimation

Fall 2021 **Master Semester Project in Life Sciences, Melissa Faggella**, *EPFL*
2D pose estimation, kinematic analysis

Spring 2021 **Master Semester Project in Computational Science, André Langmeier**, *EPFL*
Physics-based simulation, optimization

Teaching experience

Spring 2021, 2022 **BIOENG-456: Controlling Behavior in Animals and Robots**, *EPFL*
Graduate Teaching Assistant
Held weekly 2-hour exercise sessions, designed and graded exam questions, provided feedback on the mini projects, led some of the lectures.

Spring 2022 **CS-432: Computational Motor Control**, *EPFL*
Graduate Teaching Assistant
Held weekly 2-hour exercise sessions, provided feedback on the mini projects.

Spring 2021 **BIOENG-601: Python Bootcamp**, *EPFL*
Graduate Teaching Assistant
Held daily 4-hour exercise sessions for a week, led some of the lectures.

Fall 2018 **EE-363: Electromagnetic Field Theory**, *Boğaziçi University*
Student Teaching Assistant
Held weekly 2-hour exercise sessions, designed and graded homework.

Professional experience

2019–2020 **Mercedes-Benz Türk** *Connectivity, Apps & Data Analysis Team*, *Turkey*
Research and Development Engineering Intern

June–July 2019 **Izmir Atatürk Organized Industrial Zone**, *Turkey*
Electrical Engineering Intern

Skills

Programming Python, C++, MATLAB, VHDL, HTML, Assembly, C, NetworkX, PyTorch, Pybind11.

Tools	Blender, PyBullet, MuJoCo, PSpice, ROS, Linux, LabVIEW, shell, git, LaTeX, vim, Adobe Illustrator, Premiere.
Languages	Turkish (native speaker), English (advanced, TOEFL 108/120), French (conversational)

Extra-Curricular Activities

2021-*present*	Member of EPFelles, Female Student Association at EPFL
2015-2020	Writer at Sinefil, Film Magazine, Mithat Alam Film Center at Boğaziçi University
2017-2018	President of the Electrical & Electronics Engineering Student Council, Boğaziçi University
2016	Volunteer at TOG Akbank the Goodwill of the City Project, Istanbul

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