Tan Gemicioglu

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Education

Georgia Institute of Technology – Atlanta, GA	Aug *2019 – Dec 2022*
B.S. in Computer Science, Intelligence & People concentration, Minor in Physiology	GPA: 3.84 / 4.0
Robert College – Istanbul, Turkey	*Sep 2014 – May 2019*

Research Experience

Microsoft Research – Research Intern   May 2022 – Present
- Investigating EEG-based brain-computer interfaces using SSVEP for tracking visuospatial attention

Georgia Tech Contextual Computing Group – Undergraduate Research Assistant   *Jan 2020 – Present*
- Working with wearable computing pioneer Thad Starner to design smarter, more usable wearable interfaces
- Coordinating projects between students and industry on HCI research for neural communication and haptics

Northeastern University Center for Robotics – Research Assistant   Jul *2018 – Aug 2018*
- Created interfaces and wrappers for the ROS navigation, localization and mapping packages in Python
- Assisted in speeding up research on deep reinforcement learning using POMDPs for mobile manipulators

Bogazici University AILAB – Research Assistant   Jun *2017 – Aug 2017*
- Built and designed robot eyes with animated graphics using Blender, OpenGL and ROS on Raspberry Pi
- Applied HRI research to increase likability of a social robot by generating humanlike facial expressions

Industry Experience

Oracle Analytics Cloud – Software Engineer Intern   *May 2021 – Aug 2021*
- Improved UX and designed interactive data visualizations for big data service using Typescript and Oracle JET
- Integrated a highly-requested plugin adding dynamic animated displays into product with 1 million users

Oracle Corporate Architecture – Software Engineer Intern   *May 2020 – Aug 2020*
- Contributed to MVP of prototype standalone console for WebLogic Server using Docker, Helidon and Knockout
- Designed user help system and fixed UI bugs for REST-based web app to be launched to 7000+ customers

Mifos Initiative – Open Source Volunteer   Jan *2017 – May 2019*
- Solved critical bugs impacting customers' daily operations, improved stability in Javascript, Spring, MySQL
- Teamed up with hundreds of volunteers on frontend, backend of finance platform reaching 20 million clients

Teaching Experience

Georgia Tech CoC – Teaching Assistant   *Jan 2022 – May 2022*
- Taught CS3001: Computing and Society, covering privacy, intellectual property and algorithmic bias
- Ran group discussions, grading homework, collaborating with other TAs to advance ethics in computing

Georgia Tech OMSCS – Teaching Assistant   *Jan 2021 – May 2021*
- Created content for CS6601: Artificial Intelligence in Georgia Tech's Online Master's degree program
- Wrote an assignment to help students learn how to use and improve Hidden Markov Models using HTK

Projects

BrainBraille   *May 2021 – Present*
- Designing a novel brain-computer interface translating muscle tension to language from local motor activity
- Processing fNIRS signals with machine learning to enable communication for people with motor disabilities

Passive Haptic Learning   *May 2021 – Present*
- Studying passive learning with vibrotactile haptic feedback gloves for teaching how to play the piano
- Designing hardware for wireless wearable haptic glove, user-facing website and organizing user studies

SilentSpeller   *Jan 2020 – Feb 2022*
- Investigated electropalatographic wearable devices as silent speech interfaces using HTK, Sklearn and Bash
- Achieved 97% accuracy using NLP techniques and made silent, hands-free text entry system as fast as typing

AI Through Symbiosis   *Nov 2020 – May 2021*
- Researched unsupervised object recognition with head-worn displays for augmented reality applications

- Experimented with algorithms across machine learning, computer vision to develop new ML dataset paradigm

Localization of Working Memory using tfMRI   *Jul 2021 – Aug 2021*
- Analyzed fMRI time series data from Human Connectome Project with GLMs to find working memory activity
- Identified brain functional networks, compared activity across stimuli in Neuromatch student collaboration

DJI RoboMaster AI Challenge   Dec 2017 – May *2018*
- Optimized path planning and trained LSTM recurrent neural networks for an autonomous mobile robot
- Competed with 100 teams, demonstrated potential of reinforcement learning with a custom simulation

Humanitarian Robotics & Automation Technologies Competition   Nov 2016 – May *2017*
- Developed decision tree for autonomous mine detection with mobile robots in Python, Scikit-learn
- Empowered humanitarian demining by improving sensory capabilities of affordable and efficient robots

Publications

Naoki Kimura, **Tan Gemicioglu**, Jonathan Womack, Yuhui Zhao, Richard Li, Abdelkareem Bedri, Zixiong Su, Alex Olwal, Jun Rekimoto, and Thad Starner. 2022. SilentSpeller: Towards mobile, hands-free, silent speech text entry using electropalatography. In *CHI Conference on Human Factors in Computing Systems (CHI '22), April 29-May 5, 2022, New Orleans, LA, USA*. ACM, New York, NY, USA, 19 pages. https://doi.org/10.1145/3491102.3502015

Tan Gemicioglu, Noah Teuscher, Brahmi Dwivedi, Soobin Park, Emerson Miller, Celeste Mason, Caitlyn Seim, and Thad Starner. 2022. Passive Haptic Rehearsal for Accelerated Piano Skill Acquisition. In *Intelligent Music Interfaces Workshop for CHI Conference on Human Factors in Computing Systems (CHI '22), April 29-May 5, 2022*, New Orleans, LA, USA. ACM, New York, NY, USA, 4 pages. https://doi.org/10.48550/arXiv.2203.12749

Naoki Kimura, **Tan Gemicioglu**, Jonathan Womack, Richard Li, Yuhui Zhao, Abdelkareem Bedri, Alex Olwal, Jun Rekimoto, and Thad Starner. 2021. Mobile, Hands-free, Silent Speech Texting Using SilentSpeller. *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*. Association for Computing Machinery, New York, NY, USA, Article 178, 1–5. https://doi.org/10.1145/3411763.3451552

Leadership

BCI Society – Postdoc and Student Committee Member   *Jan 2022 – Present*
- Running student initiatives as part of organizing committee supporting the International BCI Meeting
- Arranging workshops on topics in BCI development to equalize knowledge across BCI researchers globally

RoboJackets
Vice President   *Apr 2021 – Apr 2022*
- Directed GT's premier robotics organization consisting of 400 students competing in 7 global competitions
- Created sustainable knowledge repository and ensured communication across core leaders, alumni and teams

Project Manager   *Apr 2020 – Apr 2021*
- Led multidisciplinary team of 60+ students in building robot to autonomously navigate open grassy terrain
- Organized team through the pandemic, managed a $10,000 budget and pioneered plan for new competition

FIRST Robotics Competition, ARC 6014 – Vice Captain and Software Lead   *Sep 2016 – May 2019*
- Won 6 awards internationally, qualified for championships twice by coordinating team of 30 students
- Taught new members how to code and created software workflows in Java using Git and Gradle

Honors and Awards

UROP Undergraduate Research Symposium 2nd Place Oral Presentation Award	Apr 2022
Georgia Tech President's Undergraduate Research Travel Award	Mar 2022
Georgia Tech President's Undergraduate Research Salary Award	*Aug 2021*
UROP Undergraduate Research Symposium 1st Place Oral Presentation Award	*Apr 2021*
Sait Halman Award for Excellence in Computer Science	*Jun 2019*
Bronze Medal in the Turkish National Olympiad in Informatics	*Nov 2018*
ICRA 2018 DJI RoboMasters AI Challenge Finalist	May 2018
ICRA 2017 Humanitarian Robotics & Automation Technologies Competition Finalist	May 2017
Google Code-in Finalist for the Mifos Initiative	*Feb 2016*
Google Code-in Finalist for RTEMS	*Feb 2015*

Skills

Languages: Python, C, C++, Java, MATLAB, R, Bash, JavaScript, SQL, HTML, LaTeX
Frameworks: Pytorch, Sklearn, Tensorflow, Kaldi, HTK, ROS, Spring, React, Node.js, Android SDK, Unity
Software: Linux, Git, Docker, Maven, Gradle, OpenCV, Gazebo, Microsoft Azure, Doxygen
Prototyping: PCB design, surface mount soldering, 3D printing, laser cutting, KiCAD, Autodesk Inventor
Modalities: EEG, fNIRS, fMRI, capacitive sensing, IMU, LiDAR, camera