Ahmet Hamdi Unal

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EDUCATION

2023 – Present, PhD Candidate (Second Year), University of Cambridge (United Kingdom)

- Specialised in experimental investigation of organic semiconductors in transistor architecture to reveal their thermal and electrical properties.
- The high level of collaboration with the group members and other groups already led to a publication submitted to the prestigious peer-reviewed journal *Nature Materials*.
- Successfully passed the First-year Review to pursue a PhD degree.

2016 – 2022, BSc (*summa cum laude*), Koc University (Turkey)

- Double majored in Physics and Electrical & Electronic Engineering.
- Graduated 1st in Physics, 2nd in Electrical & Electronics Engineering, and 3rd in College of Sciences with GPA 3.98/4.00.
- Included experimental and computational courses and projects in digital signal processing and scientific computing using MATLAB/Simulink and other languages, backed by advanced programming courses.
- Involved in research projects with professors in different fields of Science and Engineering that led to two published articles in prestigious journals, and unique tools that are highly useful for future work.
- Received a full tuition scholarship from the university and was awarded a Scientific & Technological Research Council of Turkey scholarship.

RELEVANT SKILLS

- **MATLAB/Simulink:** 7+ years of experience. Used for numerical analysis, discrete and continuous signal processing, writing GUIs, physical systems modelling, and data processing.
- **Other strong skills**: Python, C, LaTeX, Java, Mathematica and Microsoft Office.
- **Other skills not recently used:** R, C++, PSpice, LTspice, COMSOL, SolidWorks, VHDL, Xilinx ISE.
- **Laboratory Experience:** Optical spectroscopy methods (Raman, X-ray Diffraction), Cryogenic probe stations, Chemical Vapor Deposition, Photolithography, and Laser patterning.
- **Languages**: Turkish (native), English (fluent), German (intermediate).

PUBLICATIONS

- O. Ergen, E. Celik, **A.H. Unal**, M. Erdolu, "Screen engineered field effect Cu2O based solar cells", *IEEE Electron Device Letters*, vol. 41, pp. 1138-1140, July 2020. DOI: 10.1109/LED.2020.2995924
- O. Ergen, E. Celik, **A.H. Unal**, M. Erdolu, F.E. Sarac, U. Unal "Real-time chemical and mechanical human motion monitoring with aerogel-based wearable sensors", *Lab on a Chip*, vol. 20, issue 15, pp. 2689-2695, June 2020. DOI: 10.1039/D0LC00545B
- D.H.L. Tjhe, X. Ren, …, **A.H. Unal**, …, H. Sirringhaus, "Many-body, out-of-equilibrium transport physics of conjugated polymers at ultrahigh charge carrier densities", 2023, Manuscript submitted to *Nature Materials* for publication.

RELATED RESEARCH & WORK EXPERIENCE

KOC UNIVERSITY COLLEGE OF ENGINEERING & SCIENCE Istanbul, TR
Undergraduate Research Assistant February 2021 – January 2023
Supervisors: Prof Umran Inan, Koc University & Sr. Research Engineer David Lauben, Stanford University

- Researched Very Low Frequency (VLF) electromagnetic wave phenomena in near-Earth space by calibrating, processing, and plotting the DSX spacecraft data using MATLAB.
- Programmed a GUI that runs on MATLAB to plot and process spectrograms and fetch lightning data from a database to correlate measurements. It is a unique tool for this purpose and is still being used.

HOSPITAL ON MOBILE (Remote) Palo Alto, CA
Signal Processing Engineer Intern September 2021 – January 2022

- Joined the Artificial Intelligence team to detect blood pressure from the video signals of one's fingertip. Employed signal processing and machine learning methods using Python to extract useful signal traces.

KOC UNIVERSITY COLLEGE OF ENGINEERING Istanbul, TR
Undergraduate Research Assistant October 2018 – September 2020
Supervisor: Asst Prof Onur Ergen

- Fabricated ZnO nanowires for solar cell use and analysed the Raman Spectroscopy and X-ray Diffraction data using MATLAB by plotting and comparing them to the literature results.

OTHER RELATED PROFESSIONAL EXPERIENCE

FIGES INC. (MATLAB Authorised Reseller in Turkey) Istanbul, TR
MATLAB Student Ambassador August 2019 – June 2022

- Selected as the MATLAB Representative at Koc University in collaboration with FIGES Inc. Helped the organisation of events and assisted university personnel and students with MATLAB-related issues.

CS 101: HELLO, WORLD! (Remote) TR
Group Leader September 2021 – January 2022

- Instructed Turkish high school students in introductory programming skills (with Python) to promote their professional, technical, social, and personal skills. Lectured and held problem sessions.

KOC UNIVERSITY SCIENCE CLUB Istanbul, TR
Member of the Board August 2019 – September 2020

- Organized events and seminars and moderated when necessary; contacted academic members regularly.

KOC UNIVERSITY RACING TEAM Istanbul, TR
Member of Power Equipment Team Fall 2018 – October 2019

- Focused on battery cells, battery management systems, packaging, and safety for the university racing team car. Maintained contact with the battery production companies and other universities' racing teams.

KOC UNIVERSITY DEPARTMENT OF PHYSICS Istanbul, TR
Laboratory Teaching Assistant February 2019 – June 2019

- Worked as a teaching assistant at the lab component of *General Physics II – Electromagnetic*. Installed experiment setups, calibrated devices, demonstrated experiments and assisted students.

KOC UNIVERSITY OFFICE OF LEARNING AND TEACHING Istanbul, TR
Part-time Tutor February 2018 – June 2018

- Assisted undergraduate/graduate students in ***Introduction to Computer Programming with MATLAB*** by lecturing and one-to-one peer supervision by debugging their code and explaining concepts.