Utku Noyan

PHD STUDENT IN ELECTRICAL & COMPUTER ENGINEERING

University of Maryland, College Park - USA

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Education

University Of Maryland, College Park
Maryland, United States

PHD IN ELECTRICAL & COMPUTER ENGINEERING
Aug. 2021 - May 2026(Expected)

- Outstanding Teaching Assistant Award Recipient w/ Dean's Fellowship
- Teaching Assistant Training and Development (TATD) Fellow
- GPA 4.0/4.0

Koc University
Istanbul, Turkey

B.S. IN ELECTRICAL & ELECTRONICS ENGINEERING - COMPUTER ENGINEERING(DOUBLE MAJOR)
Sep. 2016 - Jan. 2021

- Ranked 516th in National University Entrance Examination (top 0.1% in 2.5 million)
- Full-merit scholarship recipient for education with High Honor Award
- GPA 3.8/4.0 (top 10 in 100 students)

Publications

DEEP NEURAL NETWORK BASED CELL SEGMENTATION FOR LAB-ON-CMOS SYSTEMS USING REAL-TIME MICROSCOPY,
2022

IEEE INTERNATIONAL SYMPOSIUM ON CIRCUITS & SYSTEMS

N.RENEGAR, U.NOYAN, P.ABSHIRE

A PROOF-OF-CONCEPT REAL-TIME PROCESSING TO CHARACTERIZE VASCULAR FLOW ,
2022

IEEE ENGINEERING IN MEDICINE AND BIOLOGY SOCIETY

S.SHAH, H.TOREYIN, U.NOYAN, Y.J.LEE

VEHICULAR VISIBLE LIGHT POSITIONING FOR COLLISION AVOIDANCE AND PLATOONING: A SURVEY,
2022

IEEE INTELLIGENT TRANSPORTATION SYSTEMS TRANSACTIONS

B.SONER, M.KARAKAS, U.NOYAN, F.SAHBAZ, S.COLERI

Current Projects

Integrated Circuit Design of Energy-Efficient Cardio Vascular Sensing and Monitoring System
C++ | ARDUINO | PYTHON | ALTIUM

Developed a reliable and cost-effective solution for a peripheral blood flow monitoring system that uses cutting-edge embedded signal processing techniques to capture the real-time beat-to-beat blood flow. The system processes the impedance plethysmography (IPG) signal in the time domain, using advanced techniques like filtering and wavelet decomposition to extract valuable information about blood flow. This allows the system to robustly map the changes in the IPG signal to peripheral blood flow.

Integrated Circuit Design of Biochemical ISFET Array for Lab-on-Chip Applications
CADENCE

Designing a CMOS-based ISFET array readout circuit using the TSMC180nm foundry process. Conducting extensive characterization and testing to optimize the performance of the sensor system and achieve Nernstian sensitivity in detecting DNA. Utilizing microfabrication techniques to create a high-density ISFET array on a silicon chip to demonstrate the ability of the ISFET array readout circuit to accurately detect DNA with high sensitivity and specificity.

Computer Vision on Vehicle Ride Compliance Tracking Models
PYTORCH | PYTHON | SWIFT

Designed a real-time Vehicle Compliance model that significantly improved the company's previous model. This model returns compliance results in just 3 seconds with 90% testing accuracy while consuming 80% less time and delivering 20% higher accuracy. The model is customized to the ensembled YOLOv5 architecture and is pretrained on the COCO dataset to detect real-time helmets from selfie images, verify the correctness of uploaded parked vehicle photos, and assess the liability of parked vehicles.

DNN Cell Segmentation For Lab-on-CMOS Systems Using Realtime Microscopy
PYTORCH | PYTHON

Compared several deep neural network-based image processing models for use with Lab-on-CMOS devices. Several image processing techniques were implemented to characterize a Lab-on-CMOS capacitance sensor to overcome the challenges posed by these opaque, integrated circuit-based devices. These techniques improved the intersection-over-union metric for image segmentation from 57% to 87% on our dataset, enabling more effective monitoring of single-cell events using capacitance sensing modalities.

Research Experience

Integrated Biomorphic Information System Lab, Professor Pamela Abshire
University Of Maryland

GRADUATE RESEARCH ASSISTANT
Sep. 2021 -

Veoride Inc., Data Analytics Team
Santa Monica, LA

COMPUTER VISION INTERN
June 2022 - September 2022

Wireless Networks Lab, Professor Sinem Coleri
Koc University, Turkey

UNDERGRADUATE RESEARCH ASSISTANT
Sep. 2019 - Jan. 2021

Multimedia, Vision and Graphics Laboratory, Professor Murat Tekalp
Koc University, Turkey

UNDERGRADUATE RESEARCH ASSISTANT
February. 2019 - Sep. 2019

Baykar Inc., Software Engineering Department
Istanbul, Turkey

ARTIFICIAL INTELLIGENCE INTERN
July. 2019 - Sep. 2019

Aselsan Inc., Communication Systems Division
Ankara, Turkey

COMMUNICATION SYSTEM ENGINEERING INTERN
June. 2019 - July. 2019

Twin Science Robotics *Istanbul, Turkey*

HARDWARE DEVELOPMENT INTERN *Nov. 2017 - June. 2019*

Previous Projects

Energy Efficient In-Memory Computing
PYTHON | TENSORFLOW | CADENCE

Designed an energy efficient embedded circuit architecture (e.g. SRAM, DRAM, RRAM) and presented its efficiency with a use case of convolutional neural network on MNIST database.

Neural Spike Detection/Sorting Circuit
PSPICE | CADENCE | MATLAB

Designed a custom VLSI chip that can recognize which neurons are triggered utilizing various analog voltage signals from a neuronal recording device (e.g. neural prosthesis).

Brain Tumour Segmentation
PYTHON | PYTORCH

Designed improved deep learning model for brain tumour segmentation such as nn-Unet, Vnet with pre- and post-processing steps. Then, to detect age of tumour Variational Autoencoders is used.

Vehicular Visible Light Positioning for Collision Avoidance and Platooning
PYTHON | SCIPY | NUMMBA | MATLAB

Illustrated the potential of VLC-based localization methods in far-reaching real automotive use cases simulation study with acquiring theoretical bounds of the designed novel method through research effort.

Robotic Path Planning
PYTHON

Developed path planning algorithms that enable UAVs to make safe landings using data of elevation, flat land, and zone characteristics that can land.

Teaching Experience

Graduate Teaching Assistant Advanced Analog and Digital Electronics | Integrated Circuit Design and Analysis | Mixed Signal VLSI Design

Undergraduate Teaching Assistant Introduction to Programming Course

Skills

Programming Languages Python, C/C++, Matlab, R, Arduino, SWIFT, MongoDB

Hardware Development VHDL, VLSI, Verilog

Circuit Design Tools PSPICE, CADENCE, XSCHEM, NGSPICE, ALTIUM Designer

Libraries Pytorch, Tensorflow, scikit learn

EXTRACURRICULAR

Istanbul Metropolitan Municipality *Istanbul, Turkey*

PROJECT LEADER OF OPEN INNOVATION PLATFORM OF ISTANBUL *Sep. 2019 - July 2021*

- Designed a Business to Government(B2G) startup acceleration program.
- Led startups, which has been selected among 400 scouted ones, to implement solutions for the environmental problems in Istanbul Metropolitan Municipalities' fields.
- Demonstrated these solutions to the city of Istanbul that 16 million people live in.

Young Guru Academy *Istanbul, Turkey*

VOLUNTEER *Nov. 2017 - August 2021*

- Worked closely with leading science, academia, and corporate experts, including Nobel laureate Professor Aziz Sancar and renowned biophysicist Professor Mehmet Toner, as part of the "YGA Dream Partners" team.
- Led a group of volunteers to design and implement hands-on Artificial Intelligence STEAM Kits for K12 students in collaboration with FORD company engineers.
- Demonstrated exceptional leadership and teamwork skills, earning a spot in the highly competitive YGA Leadership Program among thousands of high school and university applicants.