SELIM EMIR CAN

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EDUCATION

BS in Electrical Engineering — University of California, Los Angeles September 2020 - June 2024
Cumulative GPA: 3.92/4.00 (*cum laude*), Major GPA: 3.98/4.00
Selected Coursework: Computer Vision(A+), Machine Learning(A), Probability and Statistics(A+), Photonics(A+), Applied Numerical Computing(A), Signal Processing(A), Neural Signal Processing(A), Circuit Theory(A+)

RESEARCH INTERESTS

My research interests lie in **computational imaging** and **computer vision**. I want to explore its applications in remote sensing, medical imaging, AR/VR technology, and robotics. My current research work focuses on improving neural networks through uncertainty quantification and virtual staining of unlabeled tissue images via deep learning.

PUBLICATIONS

Monocular Depth Meets Uncertainty: Towards Stable and Accurate Video Depth Estimation *
• P. Chari, **Selim E. Can**, A. Vilesov, H. Chen, N. Srivastava, A. Kadambi

Thermal Imaging and Radar for Remote Sleep Monitoring of Breathing and Apnea *
• K. Del Regno, A. Vilesov, A. Armouti, A.B. Harish, **Selim E. Can**, A. Kita, A. Kadambi [Paper|Code]

Uncertainty Quantification in Vision, Learning and Robotics *Under Preparation*
• TBD

* Indicates Under Review

PRESENTATIONS AND PATENTS

Blending Camera and 77 GHz Radar Sensing for Equitable, Robust Plethysmography October 2023
• **Selim E. Can**, Jim Solomon, Achuta Kadambi *Amazon-UCLA Science Hub Fall Showcase in Luskin*

Enabling Diverse Eye Anatomy Tracking September 2023
• **Selim E. Can** *UCLA Summer Undergraduate Research Program Poster Symposium*

Enabling Diverse Eye Anatomy Tracking September 2023
• **Selim E. Can** *UCLA Summer Programs for Undergraduate Research (SPUR) Research Showcase*

Methods and Apparatus to Detect and Classify Forms of Sleep Apnea (UCLA Case no. 2024-253-1)
Filed May 29th, 2024
• K. Del Regno, A. Vilesov, A. Armouti, A.B. Harish, **Selim E. Can**, A. Kita, A. Kadambi

RESEARCH EXPERIENCE

Visual Machines Group October 2022 - Present
Undergraduate Research Assistant *Los Angeles, CA*

- Proposed an uncertainty-aware formulation for fast video depth estimation (VDE), utilizing a lightweight adapter and uncertainty-aware temporal aggregation. Improved temporal consistency (OPW) of Depth Anything by at least 36% on both NYUDv2 and KITTI datasets. Achieved SoTA OPW compared to existing VDE models.
- Proposed an anomaly detection algorithm using signal processing techniques for real-time non-contact sleep apnea detection via radar sensing and thermal imaging. Achieved 99% accuracy, 74% recall, and 68% precision on 21 hours of data.
- Implemented a compositional image generation framework that manipulates cross-attention layers in diffusion models, utilizing positional embeddings to enhance spatial relationships and object-specific attributes.

- Developed a fusion-based eye-tracking algorithm with 0.86° gaze accuracy (baseline: 2.00°) and a data synchronization codebase for Virtual Reality headsets.
- Independently built a procedural, anatomically accurate eye/skin model based on clinical research parameters for synthetic eye-tracking data generation.
- Applied adaptive filtering to reduce the effect of motion artifact in pulse oximeter blood-oxygen saturation measurements. Designed and 3D printed a pulse-oximetery hardware.

Ozcan Research Lab August 2024 - Present
Undergraduate Research Assistant *Los Angeles, CA*

- Proposed a multi-stage image registration pipeline leveraging advanced computing techniques to replace the standard yet costly and tedious tissue preparation protocols in auto-fluorescence microscopy.
- Modified the architecture of a Brownian Bridge Diffusion Model using a 3D convolutional encoder for image-to-image translation, and trained the model on microscopy data.

Robotics and Mechanisms Laboratory (RoMeLa) March 2022 - October 2022
YORI Team (Cooking Robot Project) *Los Angeles, CA*

- Designed and 3D-printed a modular gas sensor shell that stores a Raspberry Pi Zero 2W and 17 gas sensors to identify chemical signatures (volatile organic compounds, temperature, humidity) humans perceive as "smells".

SKILLS

Mechanical	CAD (Solidworks, Fusion 360), 3-D Printing
Software	Python (PyTorch, Tensorflow), MATLAB, C/C++, Git, Blender, UnityVR
Electrical	PCB Design, Soldering & Wiring, Microcontrollers

AWARDS AND HONORS

UCLA Summer Undergraduate Research Program Stipend ∼ 7000$	2023
UCLA Harley L. Wood Family Scholarship ∼ 7000$	2023
UCLA Dean's Honor List for superior academic achievement	2024, 2023, 2022, 2021
Clifton and Priscilla Smith Scholarship (New York) ∼ 3000$	2020
Parent Teacher Student Association Scholarship (New York) ∼ 500$	2020

WORK EXPERIENCE

Corning Inc. August 2019 - October 2019
Summer Research Intern *Painted-Post, NY*

- Fused different variants of composite material (SiC, Zr, NaOH) to make new cement plug compositions. Tested the strength of composite materials (ceramic pellets).
- Analyzed the microstructure of cement plugs using a scanning electron microscope (SEM), and performed strength tests on ceramic castings.
- Orally presented my findings to mentors from the Materials Science R&D Department to conclude my research and received a $500 award for the best research presentation.

EXTRA-CURRICULAR ACTIVITIES

Eta Kappa Nu (HKN) - Historian (Executive Board)

- Provided free tutoring services and hosted exam review sessions for upper-division circuits courses.
- Reported and maintained a historical record of events and meetings to IEEE HKN HQ to secure funding.

Turkish Bruins @ UCLA - Member

- Organized a philanthropy concert in collaboration with Sigma Pi @ UCLA, raising $400 for Syria-Turkey earthquake relief following the February 6, 2023 earthquake.