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), Circuit Theory(A+)

RESEARCH INTERESTS

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

PUBLICATIONS

Thermal Imaging and Radar for Remote Sleep Monitoring of Breathing and Apnea *In submission*
• K. Del Regno, A. Vilesov, A. Armouti, A.B. Harish, **S.E. Can**, A. Kita, A. Kadambi [arXiv|Project Page]

Uncertainty-Aware Models for Fast Video Depth Estimation *Under preparation*
• TBD

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

PRESENTATIONS AND PATENTS

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

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

Enabling Diverse Eye Anatomy Tracking September 2023
• Selim Emir 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, ***S.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, utilizing a lightweight adapter and uncertainty-aware temporal aggregation.
- Proposed an anomly 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.
- Proposed a compositional image generation framework by manipulating cross-attention layers in diffusion models, utilizing positional embeddings to enhance spatial relationships and object-specific attributes.
- Proposed a fusion-based eye tracking algorithm, achieving 0.86 gaze accuracy (baseline achieved 2.00 gaze accuracy), and created a data synchronization codebase for Virtual Reality (VR) headsets.

- Independently built a procedural *anatomically accurate* eye/skin-model that utilizes parameters reported in previous clinical research for synthetic eye-tracking data generation.
- Used 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 that leverages advanced computing and deep learning techniques to supersede the current standard of tedious (often inconsistent) and expensive tissue preparation protocols in auto-fluorescence microscopy.

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".
- Fabricated 2 in 1 spatula to automate cooking and minimize arm motion in limited space via dual servo motors and a microcontroller.

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 $\sim$ 7000$	2023
UCLA Harley L. Wood Family Scholarship $\sim$ 7000$	2023
UCLA Dean's Honor List for superior academic achievement	2024, 2023, 2022, 2021
Clifton and Priscilla Smith Scholarship (New York) $\sim$ 3000$	2020
Parent Teacher Student Association Scholarship (New York) $\sim$ 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. I 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)
Reported all events and meetings to IEEE HKN HQ to secure funding. Provide free tutoring services and hosted review sessions for upper division circuits classes.
Computer Vision Seminars - Undergraduate attendee
Attended presentations on computer vision/machine learning research from guest speakers and lab members from the Visual Machines Group. Attended Grundfest Lecture series on computational imaging co-organized by UCLA and Caltech. Completed techincal quizzes prepared by Prof. Kadambi.