

Çağın Selim Çoban

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EDUCATION

- **Koç University** Istanbul, Turkey
Master of Science in Computer Science and Engineering, GPA: 3.90/4.00 *Jan. 2020 – present*
- **Bilkent University** Ankara, Turkey
Bachelor of Science in Electrical and Electronics Engineering *Aug. 2015 – Jun. 2019*

RESEARCH EXPERIENCE

Research Interests: Video Object Segmentation/Detection, Multiple Object Tracking, Unsupervised Representation Learning, Autonomous Driving

- **KUIS AI Lab - Autonomous Vision Group** Istanbul, Turkey
AI Lab Fellow - Research Assistant *Jan. 2020 - present*
 - **Thesis Project** Unsupervised Video Object Segmentation with Object-Centric Graph Neural Networks.
Supervisor: Dr. Fatma Güney

TEACHING EXPERIENCE

- **COMP 100 - Introduction to Computer Science and Programming** Koç University
Teaching Assistant *Fall '20, Spring '21*

WORK EXPERIENCE

- **Omnisight AI - (NVIDIA Inception Program Startup)** Istanbul, Turkey
Embedded Vision Systems Software Engineer *Oct. 2019 - Mar. 2020*
 - Researching and developing edge-optimized video analytics deep learning models (crowd counting, pedestrian tracking and human pose estimation) for digital advertising panels on NVIDIA Jetson embedded board.
 - Interfacing hardware (camera, connectivity, battery systems) to NVIDIA Jetson and Raspberry Pi boards.
- **ParanaVision** METU Technopolis, Ankara, Turkey
Computer Vision Software Engineer - Intern *Aug. 2018 - Sep. 2018*
 - **Project:** Banknote Visual Control System for Central Bank of the Republic of Turkey (TCMB).
 - **DIP Library:** Developed an image processing library in CUDA and C++ for NVIDIA GPUs.
- **Meteksan Defence** Ankara, Turkey
Embedded Software Engineer - Intern *Aug. 2017 - Sep. 2017*
 - **Project:** Military Grade IP Radio
 - **Work:** Written codes for a RTOS (VxWorks) in C/C++. Designed a web Interface based on HTML/JavaScript and integrated device functionality through SNMP.

LANGUAGE SKILLS

- **English - C1** Professional working proficiency. TOEFL iBT: 94, MyBest: 97
- **Turkish** Mother tongue **German:** Elementary proficiency

PUBLICATIONS

- M. E. Akbiyik, C. S. Coban, E. Aygun, H. Z. Imamoglu, D. Gurgunoglu and D. Ider, "ThermoCam: Smart Baby Monitoring Assistant," 2020 IEEE 44th Annual Computers, Software, and Applications Conference (COMPSAC), Madrid, Spain, 2020, pp. 636-643, doi: 10.1109/COMPSAC48688.2020.0-185.

AWARDS

- **AI Lab Fellowship - KUIS AI Lab** Granted AI Lab Fellowship of Koc-Isbank AI Lab.
- **Research Excellence Award - Bilkent University Department of Electrical and Electronics Engineering**
Won the award in 2015 cohort with the 3D computer vision research project: Aerial Site Intelligence System.

PROFESSIONAL AND PROGRAMMING SKILLS

- **Python:** Built ML/DL models from scratch. Replicated top-conference papers. Used CV/ML/DL libraries: PyTorch, TensorFlow, OpenCV, Scipy, and Matplotlib.
- **C/C++:** Worked with OpenCV, CUDA and embedded environments.
- **MATLAB/Simulink:** Worked with computer vision, image processing and signal processing applications.
- **Full Stack (Web):** Good command in HTML, CSS, JS, Wordpress, PHP & MySQL, MongoDB and Flask.
- **Linux:** Good command in Debian based systems. **SSH/FTP Programs:** PuTTY, FileZilla, WinSCP
- **Git, VCS, Docker, AWS S3, AWS CLI**
- **LaTeX, BibTeX, MS Office, MS Project and Adobe Programs (Illustrator, Photoshop, Premiere Pro)**

SENIOR PROJECTS

- **Thermal Camera Assisted Baby Monitor:** A computer vision powered baby monitor system is developed with six senior students under the supervision of the company VESTEL. The aim is to continuously track the body temperature of a baby and notify the parents or caretakers via a cloud system if temperature is outside of the healthy range. This project is received a grant by TÜBİTAK (The Scientific and Technological Research Council of Turkey).
- **Aerial Site Intelligence System by UAV Imagery:** An aerial site intelligence system is developed to perform 3D reconstruction (by stereoscopic vision and Structure from Motion) and object detection with localization (by Faster R-CNN) under the supervision Prof. Dr. Levent Onural.

COURSE PROJECTS

Koç University

- **COMP 551 - Computer Vision with Deep Learning (Grade: A+):** Replicated several CVPR papers in VOS (Video Object Segmentation and built a DeepLabV3 based video object segmentation model.
- **ELEC 552 - Non-Convex Opt. for Interpretable Deep Learning** Replicated the results of a NeurIPS paper: A Fourier perspective on model robustness in computer vision.
- **COMP 541 - Deep Learning:** Coded and replicated Thomas Kipf's ICLR 2020 paper, C-SWM in Julia. Extended test scenarios.
- **COMP 550 - Computer Vision for Autonomous Driving:** Replicated a video object detection paper (SELSA) and done research on converting it to unsupervised.
- **COMP 547 - Deep Unsupervised Learning:** Replicated a NeurIPS iterative unsupervised object discovery model, namely Slot Attention by Thomas Kipf.
- **COMP 510 - Computer Graphics:** Trained a deep learning based deferred shader in PyTorch.
- **COMP 542 - Natural Language Processing:** Completed 4 mini projects: Sentiment Analysis, Language Models, Neural Machine Translation and Attention.

Bilkent University

- **EEE 485/585 - Statistical Learning and Data Analytics:** *Evaluation of Bag of Features Models in Image Classification:* Constructed bag of words image classifier model on ImageNet with SIFT features and k-means clustering; tested the BoW model with logistic regression, naive bayes and MLP in Python from scratch.
- **CS 484 - Image Analysis:** *Object Detection and Localization:* Built a object detection and localization model that works on ImageNet dataset in PyTorch (ResNet-50 as encoder) and scikit-SVM. Completed projects on superpixel segmentation, bag-of-words image clustering and binary image analysis in MATLAB.
- **EEE 443/543 - Neural Networks:** *Image Caption Generator:* Developed an image captioning network based on CNN and RNN from scratch on Python. *Mid-Projects:* Build these from scratch: Next-Word RNN, Autoencoder for Images.
- **CS 464 - Introduction to Machine Learning:** *Classical Music Generation:* Developed a classical music generator based on RNN + GAN with the project team in Python. *Mid-Projects:* -Built a bag of words model to classify mails with Naive Bayes. Implemented forward selection and backward elimination techniques. - Miles Per Gallon Predictor: Trained linear and polynomial models to predict given a set of features. Performed hyper-parameter tuning with grid search.

EXTRACURRICULAR ACTIVITIES

- **Member of IEEE - Region 8 (for 5 years) and IEEE CS Society**
- **Bilkent University Department of Electrical and Electronics Engineering - Webmaster (2018-2019)**
- **IEEE Bilkent Student Branch - Webmaster (2016)**