Kerem Yıldırır

Education

- 2019–Present **Technical University of Munich Department of Informatics,Germany** M.Sc in Informatics
 - 2015–2019 Sabanci University Faculty of Engineering and Natural Sciences, Turkey Computer Science and Engineering, High Honor

Experience

Oct. 2020 - Working Student, Forschungs-Neutronenquelle Heinz Maier-Leibnitz, Technical University of Present Munich

Doing high speed image processing with CUDA and C++. Working on segmenting the region of interests (possible neutron locations) using Connected Component Labeling and computing the centers of these regions for neutron imaging.

Jun. 2018 - Research Internship, Center of Vision, Speech and Signal Processing, Uni. of Surrey, Guildford, UK

- Aug. 2018 Constructed Error Correcting Output Coding (ECOC) matrices with 1000 and 10000 classes using Discriminant ECOC algorithm. Trained binary classifiers for each matrix column using a 4-layer deep neural network with Keras API ,using previously extracted features from LifeClef Challenge data set trained with SENET for training. Used Tensorflow and MXNet for Keras backend.
- May. 2018 Undergraduate Research Assistant, Center of Excellence in Data Analytics, Sabanci University
 - Jun. 2019 Worked as an Undergraduate Research Assistant at VERIM (Centre of Excellence in Data Analytics) during my graduation project period, working on Plant Disease Identification. Additionally gave a seminar on using HPC and Python modules & frameworks for Deep Learning and participated in Plant Identification contest with 10000 classes.
- Jan. 2018 **Computer Vision Intern**, Vispera Information Technologies, Istanbul Learned basics of machine learning and helped cleaning noisy data from a data set for industrial use.
- Jun. 2017 Software Engineering Intern, Bilgi Birikim Sistemleri, Istanbul
- Aug. 2017 Worked as a full-stack developer, created a web interface for processing data from a database. Documented it and presented to the executives.

Projects

Mar. 2021 - 3D Object Detection with Uncertainty, Technical University of Munich

Present Extending existing state of the art 3D detectors using uncertainty metrics.

- Nov. 2020 KinectFusion: Dense surface mapping and tracking, Technical University of Munich
- Feb. 2021 Implemented KinectFusion algorithm from scratch using C++ and CUDA.
- April. 2020 Real-time 3D Instance Segmentation, Technical University of Munich
- Sept.2020 Designed and implemented a real-time 3D object detection and tracking scheme with Python and ROS without using any annotated 3D data.

April. 2020 - Multiple Object Tracking with Tracktor, Technical University of Munich

Jun.2020 Implemented vanilla Tracktor with Faster-RCNN using PyTorch. Added a basic motion model and also a reidentification network as the paper suggested for Tracktor++ . Developed using the MOT16 benchmark and achieved following results on the training set.

- Mar. 2020 Interdisciplinary Project, Technical University of Munich
 - Present Extending the paper "Divergence-Free Shape Correspondence by Deformation" and solving shape correspondence and matching problems for the motion sequence by optimizing time-dependent vector fields without using any learning based approach.
- Sept. 2018 Plant Disease Identification with Deep Learning, Graduation Project, Sabanci University,
 - Jun. 2019 Trained a deep convolutional neural network for plant disease identification using transfer learning. Built a user interface for labeling data with multiple attributes.
- Feb. 2018 Plant Identification with Deep Learning Ensembles, ExpertLifeCLEF, Sabanci University, Gen-
- Jun. 2018 erated random ECOC matrices for 10000 classes and used simulated annealing and hill climbing to maximize the hamming distance between rows. Trained the matrix on features extracted from a deep net model and used it for error correction.
- Sept. 2017 Sketches on Raspberry Pi, Program for Undergraduate Research, Sabanci University
- Jun. 2018 Implemented Count-Min Sketch (CMS) for frequency analysis of a data stream on Raspberry Pi 3. Used tabulation hashing to reduce estimation error by computing multiple hash values for an element, and restructured CMS in order to process the data stream in parallel while avoiding possible race conditions.

Computer Skills

C/C++ Python,ROS,Pytorch,Tensorflow,OpenCV,Matlab,LATEX,Unix/Linux,OpenMP,CUDA

Publications

- 2019 F. Tasyaran, K. Yildirir, K. Kaya, and M. K. Tas, "One table to count them all: Parallel frequency estimation on single-board computers," in *Euro-Par*, 2019
- 2018 S. Atito, B. A. Yanikoglu, E. Aptoula, I. Ganiyusufoglu, A. Yildiz, K. Yildirir, B. Sevilmis, and M. U. Sen, "Plant identification with deep learning ensembles," in *CLEF*, 2018

Workshops

- Feb. 2019 Presenter, Center of Excellence in Data Analytics, Sabanci University
- Mar. 2019 Presented a series of workshops on machine learning applications and frameworks and high performance computing applications on an HPC cluster.

Languages

Turkish Native English Advanced,TOEFL iBT Score : 102

German B1

Scholarships

Sept. 2016 - Sakip Sabanci Encouragement Scholarship

June. 2019 Awarded with %50 exemption of tuition fee by the Board of Trustees as a result of academic success.

Sept. 2015 - Sabanci Foundation University Entrance Scholarship

June. 2019 %25 exemption of school tuition fee. Ranked in the top % 2 in the university entrance exam.