Kaunil Dhruv

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RESEARCH

COOPERATIVE INSTITUTE FOR RESEARCH IN ENVIRONMENTAL SCIENCES | Independent Research
June 2019 – Present | Boulder, CO

- Collaborating with Dr. Michael John Willis at CIRES on HPC implementation of CV techniques such as Image Mosaicing and 3D reconstruction using CUDA.
- Trained and optimized (60x compared to original implementation) a UResNet based semantic segmentation model for high resolution Synthetic Aperture Radar Imagery to delineate bedrocks in Antarctica mixed precision training in PyTorch.

INSTITUTE OF COGNITIVE SCIENCE | Graduate Research Assistant
May 2019 – Present | Boulder, CO & Syracuse, NY

- Working with Dr. Leanne Hirshfield and M.I.N.D Lab on Cognitive Science and Deep Learning (LSTMs and 3D-CNNs) for Multi-Label classification of fNIRS data to predict human cognitive workload.
- Researched and implemented a ConvLSTM based Siamese Neural Network to predict cognitive workload of a 50 time step 5x24 fNIRS data input.
- My work at I.C.S. also involves research and development of a multi-modal cognitive workload estimation system under a Simulated Aircraft Piloting task.
- You can learn more about my work .

EXPERIENCE

INSYLO TECHNOLOGIES SLU (CONTRACT) | Computer Vision Intern
March 2018 – June 2018 | Girona, Spain

- Developed a computer vision pipeline for volumetric estimation of Silos with the help of 2D monocular and RGB-D images.
- Researched and implemented: Depth from Focus, planar geometry reconstruction using Laser Mesh Projection.

FACEBOOK | Software Engineer in Connectivity Labs and A.M.L
Sept 2016 – Dec 2017 | Menlo Park, CA & Mumbai, India

- Researched and implemented a pipeline for Visualization of learned features of a CNN to improve model training for VGG-16, SegNet, and U-ResNet architectures.
- Built an active learning framework which helped enhance the generalization capabilities of models for estimating the roads and building in unseen geographies.
- Developed data annotation tools using Qt5 (c++) used by a team of G.I.S Analysts for exploiting the aforementioned active learning framework.
- Designed deployed an Android App using an R-Tree based back-end to validate predicted road geometries
- All the codes are open sourced and maintained at github://facebookresearch/street-address.

ISENSES INC. | Research and Development Intern
Dec 2015 – Jan 2016 | Mumbai, India

- Developed a machine learning pipeline for Disguised Face Detection from 2D images.
- Implemented a SegNet based feature detector to identify facial action units which were then used to classify disguised faces using an S.V.M loss based classifier.
- Entire pipeline was optimized and implemented on a an FPGA and materialized into a product.

EDUCATION

UNIVERSITY OF COLORADO BOULDER | PhD in Computer Science
Expected May 2023 | Boulder, CO • Cum. GPA: 3.54
RelevantCourses: Advanced Robotics • Machine Learning • Computer Vision • Natural Language Processing • Advanced Computer Graphics • Big Data Analytics

UNIVERSITY OF MUMBAI | B.E. in Computer Science
Aug 2013 - May 2017 • Cum. GPA: 7.0/10.0