Kaunil Dhruv

M.S. in Computer Science • University of Colorado - Boulder
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SKILLS

PROGRAMMING
Over 100kloc:
Java • Python • CPP
C • JavaScript • PHP
Over 1000 lines:
Assembly • MatLab • Bash

AREAS OF INTEREST
Machine Learning
Computer Vision
Data Science

DEEP LEARNING
Libraries
Tensorflow • Chainer
PyTorch

WEB DEVELOPEMNT
Front End
ReactJS • AngularJS
d3.js • WebGL
jQuery
Architectures
M.V.C

APP DEVELOPMENT
Android
React Native
Apache Cordova

SOFTWARE
PostGIS and QGIS
OpenStreetMaps
Amazon Web Services

EDUCATION

UNIVERSITY OF COLORADO BOULDER
MS in Computer Science
2018 - 2020

COURSEWORK

Machine Learning
Natural Langauge Processing
Computer Vision

LINKS

Github:// **kaunild**
Expertify:// **expertify.co**
LinkedIn:// **kaunil-dhruv**

EXPERIENCE

INSYLO TECH. SLU - CONTRACT | Computer Vision Engineer
March 2018 – June 2018 | Skills : Python • Chainer • OpenNI • Android
- Developed Computer Vision Pipelines for Volumetric Estimation of Silos using 2D and 3D images.
- CV Techniques such as Depth from Focus and depth from Laser Mesh Projection were implemented.
- Researched the performance of GANs for generation of depth maps using 2D (monocular) images.
- Assessing the feasibility of depth sensing cameras (Astra Pro, Intel Realsense) in a production setting using Android device and Raspberry Pi.

FACEBOOK | Software Engineering Intern + Software Engineer
September 2016 – 2018 | Skills : Python • Chainer • CPP • Android

- Worked with Connectivity Labs and mentored by Prof. Ramesh Raskar.
- Researched and implemented a pipeline for Visualization of Learned Features of a CNN based on SGD to **improve model training for SegNet, VGGBn and UResNet architectures.**
- Created Data Annotation tools using Qt5 used by a team (5) of GIS Analysts.
- Optimized rendering of 2D vector geometries on an Android App. **This optimization made it possible for the Android Application to be used by low end phones and reduce costs by a factor of 10.**
- All the codes are open sourced to **facebookresearch/street-address**

ISENSES INC. | Software Engineering Intern
Jan 2015 – Jan 2016 | Skills : CPP • OpenCV • Android
- Developed a Machine Learning pipeline for Disguised Face Detection.
- Implemented a SegNet based feature detector to identify facial action units which were then used to classify disguised faces using an SVM Classifier.
- **Entire pipeline was optimized and implemented on a an FPGA and materialized into a product.**

RESEARCH EXPERIENCE

COBRIX | Coding with Bricks
Team : Jang Hee I • Giechol Shin
Algorithms : Faster-RCNN • SVM

- Project aimed at developing a Physical Computing Interface for the visually impaired to learn computer programming.
- Implemented a Machine Learning pipeline for object localization and classification.

LEARNER CENTRIC AFFECT MONITORING SYSTEM | KJSCE
Team : Prof. Kavita Kelkar
Areas : Affective Computing

- eLearning system adaptive to a Student's emotional state. Using student's facial expressions and their keyboard and mouse activity we classify the emotional state of the student into confused, confident, distracted.
- Facial expressions are classified using a Deep Convolutional Neural Network.
- Currently, researching the application of NLP for classifying keyboard and mouse activity.

PUBLICATIONS

- Ilke Demir, Forest Hughes, Aman Raj, **Kaunil Dhruv** , Suryanarayana Murthy, Sanyam Garg, Barrett Doo, Ramesh Raskar. "A Holistic Framework for Addressing the World using Machine Learning". **CVPR 2018 workshops** .

- Ilke Demir, Forest Hughes, Aman Raj, **Kaunil Dhruv** , Suryanarayana Murthy, Sanyam Garg, Barrett Doo, Ramesh Raskar. "Generative street addresses from satellite imagery". International Journal of Geo-Information **(ISPRS 2018)**

- Ilke Demir, Forest Hughes, Aman Raj, Kleovoulos Tsourides, Divyaa Ravichandran, Suryanarayana Murthy, **Kaunil Dhruv** , Sanyam Garg, Jatin Malhotra, Barrett Doo, Grace Kermani, Ramesh Raskar. "Robocodes: Towards Generative Street Addresses from Satellite Imagery". **CVPR 2017** workshop on Earthvision. **(best paper award)**

PROJECTS

EXPERTIFY
Technologies: ReactJS · Ruby on Rails
URL: https://www.expertify.co

- A messaging platform for aspiring leaders and enthusiasts to connect with experts in their domain.
- Since the launch, (27th June 2018) Expertify has been consistently able to maintain 456 monthly active users.

OFFEE - OFLINE EDUCATION AND ENTERTAINMENT SYSTEM
Technologies: AngularJS · php · MySql · Android
URL: https://www.offee.in

- Developed a CMS for managing and streaming multimedia content to users by an android app.
- The CMS was then hosted on a local network formed by multiple raspberry pi's balanced using DNS Round Robin Technique.
- Each PRi server, could then serve an average of 40 users while streaming Full HD content.
- Since the network is closed, this system was later augmented with a CMS for conducting weekly tests by the KJ Somaiya College of Engineering.

OBJECT DETECTION AND TRACKING
Technologies: OpenCV · Python
Algorithms: CamShift · SIFT

- Tracking using a combination of CamShift and SIFT algorithms since color based CamShift alone had poor tracking performance in case of complex scenes.

MEDICAL REPORTS DIGITIZER
Analyze user's health using their Medical Reports
Technologies: OpenCV · Android · O.C.R.

- Built an Android Application to scan and digitize a users medical reports.
- Results obtained from OCR of users' reports were then fed into a LSTM based RNN Network to predict users' health and advice any changes to benefit their health.

TEXT SUMMARIZER
Generate headlines from a corpus of text
Algorithms: LSTM, RNN
Technologies: Chainer, Python

- Implementation of the Attentional Encoder-Decoder architecture described in **this** paper.
- Explored application of LSTM Networks for NLP.

AWARDS

- **Best Paper Award** for the research paper "Robocodes: Towards Generative Street Addresses from Satellite Imagery" in **CVPR 2017** workshop on Earthvision.
- **Microsoft Imagine Korea Semi-Finalist** for our Project - **COBRIX**