Shahid Razzaq

San Jose, CA - Email me on Indeed: indeed.com/r/Shahid-Razzaq/a5e0dfb1a4a455e2

Self-driven R&D engineer, working in the areas of:

• Computer Vision / Signal Processing
• Machine learning and algorithms
• Computer Graphics

Enrolled in Udacity Self-Driving Car Nanodegree Program.

Complete profile at: https://www.linkedin.com/in/shahidrazzaq
Authorized to work in the US for any employer

WORK EXPERIENCE

Software Engineer

Facebook - Menlo Park, CA - April 2017 to Present

R&D at Building 8.

Building 8 brings together world-class experts to develop and ship groundbreaking products at the intersection of hardware, software, and content. There is a clear mandate to ship products at scale. In particular, seemingly impossible products that define new categories and that advance Facebook's mission of connecting the world. The B8 team applies DARPA-style breakthrough development at the intersection of ambitious science and product development.

Machine Vision Engineer

Peel Technologies - Mountain View, CA - April 2015 to February 2017

Peel is a startup focusing on Smart Remote for smartphones and tablets with more than 100 million user activations. Worked on:

• 3D Reconstruction:
Built the pipeline for reconstructing 3D model of objects using depth sensors. Objects are first scanned using a depth sensor by an Android device and the depth information is used to reconstruct a 3D model using PCL (Point Cloud Library) Kinect Fusion. 3D model can be explored with 6dof.

• Touch Projection:
Built a projector based touch interface that can convert any surface into a touch device. Used depth sensors to sense user gestures and interaction with a projected UI (e.g. Android tablets). Gestures were then routed back into the source device using (touch) event injection.

• Natural Language Processing (NLP):
Built complete NLP solution using machine learning to empower Peel Smart Remote app to understand voice commands for their content watching experience. Used Google’s TensorFlow framework and neural networks to train and predict user commands for all actions related to TV/STB.

• Automatic Content Recognition (ACR):

Built a scalable and robust ACR solution using audio fingerprints to detect content in real-time. Solution included real time training based on content fingerprints and using those fingerprints to identify incoming content. Used digital signal processing (DSP) to extract feature points from audio signal.

• Medical Diagnostics:
Developed algorithms for calculating heart rate and oxygen saturation (SpO2) level on mobile devices. Algorithms used (PPG) signals from photo-sensors that would register reflectance of light emitted from LEDs.

Software Developer - Emerging Technologies Group

Wells Fargo - San Francisco, CA - March 2014 to September 2015

Architected and implemented cutting edge prototypes for Innovation and Emerging Technologies group. Responsible for building on new and emerging technologies to improve existing business solutions. List of projects taken from conception to completion:

• Face Detection & Recognition (Computer Vision/Biometrics):
Automatic face registration and recognition in video using 3D (head) pose estimation. Face detection as well as facial feature tracking using OpenCV (algorithms: POSIT, Eigenfaces, Fisherfaces, Local Binary Patterns)

• 3D Visualization Engine (Computer Graphics):
Design and implementation of a general purpose visualization engine (patent application in process). Showcasing engine capabilities with financial data visualizations: 1) Geographic location (latitude/longitude on globe) based 3D connections 2) Graph based social network connections 3) 3D multi-tier data grouping.

• Gestures Interfaces (Sensors):
Gesture based user interaction in financial data visualization using Kinect sensor (skeleton tracking) and hand gestures with Leap motion. 3D orientation and feedback on roll/pitch/yaw using Sphero.

• Quadcopter Navigation (Computer Vision):
3D navigation with 6DoF, guided by on-board camera based run-time face detection.

• Proximity Detection & Indoor Positioning (Sensors):
Bluetooth LE and iBeacon (Estimote, Tod) based proximity detection and positioning using trilateration (Android devices)

(project details in 'projects' section below)

Sensors and Devices: Kinect, Raspberry Pi, Leap Motion, Sphero, BT LE
Tech. Betas: Android Wear, Google Glass, Google Cardboard

Data and Simulation Engineer - Visa Labs

Visa - Foster City, CA - November 2014 to March 2015

Financial transaction data modeling and simulation. Designed and developed a novel transaction simulator, capable of simulating shopping behavior in a geographical region populated with merchants. Modeling the spending behavior of clients and determining how their spending behavior is influenced by external factors.

Coupled with the modeler and simulator is the machine learning component to the system based on scikit-learn. Unsupervised learning (clustering, PCA) and classification (supervised learning) are done on the generated data and the learning algorithm is tuned to recognize patterns in real data.

Simulator framework developed from the ground up using Python and analytics layer using OpenGL.

Assistant Professor

National University of Sciences and Technology - Islamabad - April 2009 to August 2012

Active developer in faculty role at School of Electrical Engineering and Computer Science (SEECS). SEECS is the flagship school at NUST, and is ranked 1st in Pakistan by QS World University ranking.

Summary of work done (details in the projects section):

- 4 research publications in areas of machine learning, computer vision, algorithms
- Developed and deployed scheduling solutions at university
- Created gaming platform on real world terrain
- Developed algorithm testing infrastructure for chess strategy algorithms
- Team member of multiple Kinect Sensor based industry projects
- Member of Smart Machines And Robotics Technology Lab

Undergraduate courses instructed:

- Operating Systems, Data Structures and Algorithms, Computer Graphics, Object Oriented Programming, Fundamentals of Computer Programming, iPhone Application Development

Rapid Prototyping:

Demonstrated expertise in prototyping of research ideas and testing hypothesis based on data visualization.

Software Design Engineer

Microsoft - Redmond, WA - February 2001 to November 2008

- Designed and implemented features for multiple product releases in Window Media Digital Rights Management (DRM) and PlayReady in Windows Vista. Owned the media rights management component through multiple releases of the product.

- Performed software development using Agile practices such as Scrum and test driven development (TDD). Enhanced the product functionality by extending existing design patterns and performing object oriented analysis and design (OOAD).

- Acted as go-to person for cross-team relationship with dependent teams and enabled DRM for terrestrial (cable) and satellite based releases in Windows Media Center.

- Demonstrated in-depth diagnostic expertise by working with protected processes, code obfuscation, anti-debugging and WMDRM for ND (Network Devices, Xbox).

- Developed solid foundations in embedded systems through sustained engineering work in Windows CE (Windows Mobile). Diagnosed and fixed customer issues in Windows CE product with very quick turnaround.

- Achieved high bug fixing rate for the Windows CE Operating System. Other areas included: Networking, Remote Desktop, Internet Explorer, Windows CE IDE (Platform Builder), Media Foundation Classes, and system applications.

- Demonstrated high degree of versatility by working with undocumented code and design. Development productivity enhancing tools – most notably automated code porting tool.

EDUCATION

MS in Computer Science

University of Washington - Seattle, WA
2004 to 2008

BS in Computer System Engineering

Ghulam Ishaq Khan Institute of Engineering Sciences and Technology - Topi, Pakistan
August 1996 to June 2000

SKILLS

C++ (10+ years), Python (4 years), Java (5 years), R&D (4 years), Computer Vision (5 years), Machine Learning (4 years), OpenGL (7 years)

LINKS

https://www.linkedin.com/in/shahidrazzaq

PUBLICATIONS

TOBAE: A Density-based Agglomerative Clustering Algorithm

http://dx.doi.org/10.1007/s00357-015-9166-2
March 2015
An agglomerative clustering algorithm with automatic cluster count detection and anomaly filtering. TOBAE works by tracking the cumulative density distribution of the data points on a grid and only requires the original data set as input (no parameters needed). The algorithm outperforms state of the art clustering algorithms by the additional feature of automatic noise filtration around clusters. It finds the appropriate number of clusters while giving a competitive running time.

ADDITIONAL INFORMATION

https://www.youtube.com/user/shikarigmail/videos?view=0&sort=dd&shelf_id=0