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Employment

Amazon, USA 3/2017 – 11/2020
Robotics Systems SDE: Amazon Scout (Autonomous Delivery Vehicle): Design and develop robot systems and middle-ware services to support robot subsystems to communicate between each other.

Amazon Web Services*:* Design and develop distributed services for new AWS Services. More details will be available once product is released for general availability (currently in internal beta).

Udacity, USA, Race Team, 2/1017-3/2017

Worked about 8 weeks to build a autonomous race vehicle to compete at the Self Racing Car event in Willows California as part of Udacity Student Team.
Here is the final report: https://medium.com/udacity/our-very-own-grand-challenge-b004a9863024

Microsoft Corporation, USA 5/2015 – 2/2017
Software Engineer II, Office 365 Modern Support User Experience team

Responsibilities: Collect user usage data, create and train models to predict user behavior based on past experience and guide user through the Office 365 Administration portal to improve user experience and satisfaction and reduce costly support request by administrators.

Software Engineer II, Office 365 Modern Support Concierge team
Responsibilities: Work on the Office 365 support web service which is accessed by small business and enterprise customers. Own the authentication, authorization component (with support of active directory and Oauth2) and organization segmentation/ access restriction of the web service.

Caradigm [Health care subsidiary of General Electric], USA 5/2013 – 4/2015
Software Engineer, Data Ingestion Core Team
Responsibilities: Implementation of Speed Table that synchronizes large scale data (US Patent# 20150278297). Worked on web services for speed table. Owned data pipeline management tool and debugger used by the service operations team of clients.

Microsoft Corporation, USA 12/2009 – 05/2013
Software Development Engineer in Test, Office 365 Datacenter team
Responsibilities: Implemented and own monitoring components based on Active Monitoring for one component of Datacenter Deployment monitoring. Created the Priority Interrupt Queue that showed the current data center deployment failures which needs human attention for Office 365 (Exchange only) datacenter machines. Collect data and aggregate with COSMOS (similar to Hadoop + HDFS combined with a language to process large scale data) from production systems.

Microsoft Canada Development Center, Canada 10/2008 – 12/2009
Software Development Engineer in Test, Office Auth and Control Team
Responsibilities: Worked in Exchange Auth and Control team. Own tests for role bases access control, and built tools to make engineering process easy.

KAZ Software Ltd, Bangladesh 4/2007 - 9/2008
Software Engineer, Data Vault device driver team
Responsibilities: Developed and maintained windows file system driver for enterprise document management suite for engineers. Document management system is a distributed database and the file system driver exposes data.

Sikraft Solutions Ltd, Bangladesh 8/2005 - 3/2007
Software Engineer,
Responsibilities: Implemented the PACS service that uses DICOM protocol. Owned the Laboratory Interfacing Server for laboratory department of hospitals that communicates with hospital information system.

Other Projects Outside Work

Drive a car autonomously using CNN - https://kuasha.github.io/ccwriteup/carcontrol.html
Used neural network motivated by the network built at Nvidia research and trained it with Udacity Self Driving Car simulator driving image data and participated in race for self racing cars (). Tensorflow and Keras are used to create the CNN.

Traffic Sign Classifier using CNN
Took the LeNet convolutional neural network and trained it with German traffic sign data set to classify various traffic signs on the street. Tensorflow is used to create the CNN.

Trajectory prediction using Hidden Markov Model - https://marufabbasi.com/ai4r_final_report.pdf

Created Hidden Markov Model to predict trajectory of a physical hexbot robot moving on a rectangular plane. Trained the model using 30 minutes of training data and predicted next 60 moves with an L2 (distance) error of 426.575 on test data.

Finding lane markings for highway driving

Used computer vision techniques and Kalman filter to detect straight and curved lanes on video streams while driving on highways.

Finding runaway robot

Used extended kalman filter to predict a robot position using noisy sensor data.

Process migration with universal IO

Developed a Java Virtual Machine using C++ to migrate a process from one machine to another preserving IO handle. Implementation and details can be found on codeproject.com.

JIT Compiler

Experimental JIT compiler for my JVM. The details of the work can be found on my blog that includes core code.

Education

Master of Science, Computer Science (computational perception and robotics)
Georgia Institute of Technology, USA (dropped after change of company as funding was no longer available)

B.S., Computer Science and Engineering
Shah Jalal University of Science & Technology, Sylhet - 3114, Bangladesh.

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