Saahil Ognawala

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EDUCATION

Ph.D. candidate – Ongoing
Technische Universität München, Munich, Germany,
Concentration: Smart compositional software testing

Master of Science – Oct. 2014
Technische Universität München, Munich, Germany,
Major: Artificial Intelligence/Machine Learning, Minor: Software Engineering

Bachelor of Engineering – July 2011
Manipal Institute of Technology, Manipal University, India,
Concentration: Computer Science and Engineering

COMPUTER SKILLS

Languages & Software: Python, C/C++, Java, R, Matlab, PHP, regular expressions using Perl, HTML, CSS, Javascript, Django python framework *Databases:* MySQL, SQLite, PostgreSQL *Operating Systems:* Linux, Windows, MacOS X

PUBLICATIONS

- Fast Feedback Cycles in Empirical Software Engineering Research, **International Conference on Software Engineering**, May 2015
- Illumination Compensation and Normalization using Low-Rank Decomposition of Multispectral Images in Dermatology, **Information Processing in Medical Imaging**, May 2015
- Regularizing Recurrent Networks - On Injected Noise and Norm-based Methods, **arXiv Preprint - http://arxiv.org/abs/1410.5684**, Nov. 2014
- Where do we stand in requierements engineering today? First results from a mapping study, **International Symposium on Empirical Software Engineering and Measurement**, Sept. 2014
- Requirements engineering improvement today - A sytematic mapping study, **TU Munich Technical Report, TUM-I145**, March 2014
- Early functional size estimation with IFPUG Unit modified, **2010 IEEE/ACIS 9th International Conference on Computer and Information Science (ICIS)** , August 2010

EXPERIENCE

Researcher at Chair of Software Engineering January 2015 - Current
TU Munich

- Adaptive hybrid combination of blackbox fuzzing and concolic execution to find low-level vulnerabilities in programs.
- Compositional reachability analysis of programs using symbolic execution.
- Domain specific vulnerability scoring system using expert analysis.

Scientific Assistant October 2012 - November 2014
TU Munich

- Classification of surface texture and curvature for Europe funded TACMAN project (details under academic projects section).
- Natural language processing based data analysis of user stories and requirements meta-data to gain insight into wrong estimations, for agile development companies.
- Involved in research related to Artefact-based Requirements Engineering and RE Process Improvement.

System Software Engineer August 2011 - Sept. 2012
Hewlett Packard Corp., Bangalore

- Worked with the NonStop SOAP team to implement the backbone architecture for SOAP based web services framework on HP's proprietary NonStop OS. Responsible for implementing WS-Security.

College Intern January 2011 - June 2011
RSA - The security division of EMC, Bangalore

- Worked as a QA intern for the Data Loss Prevention (DLP) team to integrate on a high level, two major RSA products, viz. DLP and Archer (e-Governance, Risk Control Suite).

Summer Intern May 2010 - June 2010
Jawaharlal Nehru University, New Delhi

- Implemented statistical techniques of **Web Recommender Systems** , viz. Content Based, Collaborative, Demographic and Hybrid recommendation. Trained and tested over MovieLens database.

Summer Intern May 2009 - July 2009
Otto von Guericke Universitat, Magdeburg, Germany

- Studied and modeled **Software Failure Modes and Effects Analysis**. Developed a web tool for analyzing the risk factors in SPLC stages defined in Waterfall Model, V-Model, Prototyping Model etc.

ACADEMIC PROJECTS

Regularization of recurrent neural networks - Master thesis

- Comparing the performance of norm-based regularizers in deep time series networks with advanced techniques like Fast-Dropout, Hessian-free optimization and initialization hacks based on spectral radii. RNNs typically suffer from exploding or vanishing gradient problems when trained using conventional methods like gradient descent or rmsprop and we aim to deal with this issue analytically.

Tactile Manipulation (TACMAN) using BioTac data

- Using pressure, force, torque and piezoelectric sensor data to classify surface information such as friction and curvature, from robot hands. Ultimate goal is to design gripping mechanisms that are sensitive to surface material, much like humans.

Segmentation of erythema in multispectral skin images

- Deep learning on spectral data from 10 channels to learn properties of lesions in different skin diseases; segmenting the affected region and incorporating segmentation into diagnostic workflow of the physician seamlessly.

Smart annotation of limb cartilages

- Learning patterns of cartilages and joints in 3D-MRI, using Convolutional Neural Networks with max-pooling layers.

MNIST digit classifier

- Learning of hand written digits. Techniques verified were Multinomial Logistic Regression, multilayer perceptron, PCA, sparse autoencoder and K-means clustering.

Network Traffic Monitor

- Implemented active 'data in motion' security. Packet sniffing on TCP packets and sensitivity checks Perl style regular expressions for analyzing the content. Audit information is provided in an OpenDLP UI.

U_Need - A location based classifieds search engine

- Created a Python based classifieds search for products and services. Custom keyword search algorithm with proximity determined by Google Maps API.

ORGANIZATIONAL EXPERIENCE

- Active participant and contributor to Linux User's Group Manipal (2008-2011)
- Served as the class placement co-ordinator from August 2010 to January 2011.
- Event head of MobiVision, a mobile application development contest in Techtatva-09, national level technical fest of Manipal University.

CO-CURRICULAR

- First prize in Jour, a 24 hour software development contest in Techtatva-10.
- First prize in Codebytes, a programming contest in Techtatva-09.
- Second prize in JavaFX rapid application development contest held in the campus by Sun Microsystems, in 2009.

INTERESTS

- UI/UX designing, sport climbing, reading, Rubik's cube enthusiast (best time of 160s on 3x3), rock and blues music