Shivangi Aneja

PhD Student at Visual Computing Lab, TUM

Education

2020–Present **PhD from Visual Computing Lab, TUM**, *Technical University Of Munich, Germany*.

2017–2020 **MS in Informatics (Computer Graphics & Vision)**, *Technical University Of Munich, Germany*.
Magna Cum Laude

2011–2015 **B.Tech. in Computer Science & Engineering**, *National University Of Technology, Hamirpur (India)*.
Gold Medalist

Master Thesis

Title *Generalized Zero and Few-Shot Transfer for Facial Forgery Detection*

Supervisor Prof. Dr. Matthias Nießner

Description The thesis proposes a novel transfer learning paradigm towards building a *universal* detector that detects most of the facial forgeries surfacing the internet. Benchmarked the results on in-the-wild videos.

Achievements

2019 **Travel Grant,** 14th Women in Machine Learning Workshop (WiML 2019)

2019 **Full Scholarship,** Eastern European Machine Learning Summer School, Romania

2019 **Travel Grant,** Advanced Technology Higher Education Network(ATHENS)

2017 **"L.I.V.E" Small Team Award**, Lending Analytics, Nucleus Softwares

2016 **"Pride Of Performance" Award**, Lending Analytics, Nucleus Softwares

2015 **Gold Medal** for graduating top of the Computer Science Batch (2011-2015) during Bachelor's degree

2009 **Roll Of Honour** for graduating top of the High School (Science and Mathematics)

Academic Projects

2019 **Barbeque Planner**, *Software Engineering for Business Information Systems, TUM*.
Advisor Patrick Holl: A web application (using MERN stack) for planning Barbeque parties.

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shivangi-aneja/ • *shivangi2201* • *shivangi-aneja*

2018 **Multi Modal Brain Structure Segmentation using Adversarial Learning**, *Image-Based Biomedical Modeling (IBBM) Lab, TUM*.
Advisor Prof. Dr. Bjoern Menze: Semantic Segmentation on brain MRI scans in a few shot setting using GANs.

2018 **Polyp Localization in Colonoscopy Videos**, *Chair for Computer Aided Medical Procedures & Augmented Reality Lab, TUM*.
Advisor Dr. Shadi Albarqouni: Object detection networks to detect polyps (malignant/benign) in colonoscopy videos.

2018 **Deep Image Composting**, *Visual Computing and Artificial Intelligence Lab, TUM*.
Advisor Prof. Matthias Nießner: GANs with specialized loss function was used to make composite images realistic.

2018 **Deep Clustering**, *Computer Vision Lab, TUM*.
Advisor Vladimir Golkov: Trained deep neural networks (autoencoders) to improve the clustering accuracy/NMI on MNIST, FMNIST, CIFAR-10, STL-10 datasets. Visualized clustering results with t-SNE.

2017 **Data Mining Cup 2017**, *Decision Science & Systems, TUM*.
Advisor Prof. Dr. Martin Bichler: A data mining challenge on BMW dataset to predict the availability of electric vehicle charging stations at a particular time. Our proposed ensembling technique and hyperprameter optimization placed us in top 2% of the challenge.

2015 **Cooperative Spectrum Sensing in Cognitive Radio (Bachelor Thesis)**, *Computer Science Department, NITH*.
Advisor Dr. T.P. Sharma: Secondary users could use spectral band when not used by primary users. Local and cooperative sensing was used for energy detection.

Employment History

Work Experience

Winter 19/20 **Teaching Assistant (Introduction To Deep Learning, Module IN2346)**, TUM, Germany.
Responsibilities include preparation of lecture slides, assignments and exam correction. Conduct weekly office hours for doubt sessions in person as well as on moodle.

2019–2020 **Working Student (Siemens Mobility, Gmbh)**, *R & D Transportation Lab*, Munich, Germany.
- Designed the visualizer for path tracking using Google Maps API.
- Noise Removal from the GPS data using Kalman Filters.
- Modelling for activity prediction (Walk, Run, Car, Bus, Tram, Train etc) of the users.

2018 **Research Assistant**, *Institute for Computational Mechanics , TUM*, Munich, Germany.
Worked for three months on the TUM startup project EbenBuild to improve artificial ventilation for lungs.

2015-2017 **Senior Software Engineer (Nucleus Software Exports Ltd, India)**.
- **Algorithms Implemented:** Association Rule Mining, Sequence Mining Algorithm, Random Forest, K-Means Clustering, Logistic Regression, Multiple Linear Regression
- **Performance Upgrade:** Improved Model Building Time of Decision Tree algorithm
- **Database Script:** Creation, Rollback and Cleanup for the entire application

Internships

2018 **Interdisciplinary Project (In Cooperation With TUM)**, *Innospot Gmbh*, Munich, Germany.
Implemented an AI-based software solution to keep track of the startup landscape using various web-crawling and machine learning techniques.

2014 **Summer Intern**, *IIT Bombay*, India.
Developed a forum for interaction between IIT professors and students. Also developed an android application for same forum to provide inter-connectivity with hand-held devices.

Skills

Programming Skills: Python, Java, R

Python Libraries: Numpy, Scipy, Matplotlib, Pandas, SciKit-Learn, OpenCV

Deep Learning Frameworks: PyTorch, TensorFlow

Database: MySQL , Oracle , MongoDB

Web-Related Knowledge: Bootstrap,JQuery, JavaScript, React, NodeJS

Others: Eclipse, Jenkins, SonarQube, JIRA, PyCharm

Workshops & Summer Schools

Dec, 2019 **14th Women in Machine Learning Workshop (WiML 2019) , Vancouver (Canada)** .
Selected for poster presentation at Women in Machine Learning (WiML) Workshop, co-located with Conference on Neural Information Processing Systems (NeurIPS).

July, 2019 **Eastern European Machine Learning Summer School , Burcharest (Romania)**.
Selected as one of the 160 participants (out of 700+ applicants from 70+ countries). One week (1-6 July 2019) of lectures and practical sessions on Deep Learning. My work was also selected for poster presentation.

March, 2019 **Advanced Technology Higher Education Network(ATHENS) , TU Delft, Netherlands**.
Selected for one-week exchange program for the course Finite Element Algorithms.

Competitions & Hackathons

2019 **Artificial Intelligence for Social Good(AI4SG)**.
Ranked 7 in the Kaggle Competition for data analysis and prediction of energy consumption on time series data.

2018 **HackaTUM 2018**, *TUM*, Germany.
Alexa App for interaction between Patients and Doctors for deep analysis of healthy/unhealthy eyes.

2016 **WCI (Wiki Conference India) 2016**, *CGC College, Chandigarh*, India.
Developed a WikiSpeak application which would speak the text on Wikipedia page in English Language.

2014 **Mozilla Firefox Hackathon 2014**, *IIT Bombay*, India.
Designed an application for Firefox devices for viewing Flight Schedule.

2014 **MediaWiki Hackathon 2014**, *IIT Bombay*, India.
Implemented multi lingual feature for certain pages of Wikipedia.

Volunteering Activities

2019 **WiML 2019**, *Vancouver*, Canada.
Served as reviewer and volunteer for 14th Women in Machine Learning Workshop.

2011-2015 **GLUG (GNU Linux Users Group)**, *NITH*, India.
Worked as an active member of college society GLUG

2011-2015 **CSEC (Computer Science Engineers Community)**, *NITH*, India.
Worked as an active member of college departmental society

2011-2015 **Team .EXE**, *NITH*, India.
Worked as coordinator of the team during Nimbus, the Annual Technical Festival of NIT Hamirpur

2013-2015 **Literacy Mission "Prayas"**, *NITH*, India.
Taught the underprivileged students high school mathematics and science.

Poster Presentations

NeurIPS 2019 **Multi Modal Brain Structure Segmentation With Adversarial Learning**, ***S. Aneja****, H. Li, B. Menze*, 14th WiML Workshop, 2019, (Poster).

NeurIPS 2019 **Deep Image Compositing**, ***S. Aneja****, S. Mazumder*, 14th WiML Workshop, (Poster).

EEML 2019 **Polyp Localization In Colonoscopy Videos**, ***S. Aneja***, 2nd EEML Summer School, (Poster).

References

Prof. Dr. Matthias Nießner *Visual Computing Lab, TUM*

Prof. Dr. T.P. Sharma *Computer Science Department, NITH*