

Academic Projects

Master Thesis	CAMP*, Technical University of Munich	June 2017 – Present
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Multiple Action Prediction in Deep Reinforcement Learning (Python, Tensorflow, OpenAI Gym) [1]

- Proposed a new formulation for policy gradient reinforcement learning algorithms in continuous action space problems.
- The method predicts multiple action values at each state which facilitates better exploration during training and the agent converges to a better policy.
- Evaluated and compared the performance of the proposed formulation against other continuous control algorithms (A3C, DDPG) on various Mujoco environments.

Inter-Disciplinary Project	Technical University of Munich	Oct 2016 – Mar 2017
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Cell Detection in Lens-free Microscopy Videos (Python, Keras) [2]

- This aim of the project was to detect and localize cells in lens free microscopy image sequences using deep convolutional neural networks (CNN).
- In this we experimented with different deep CNN architectures (FCN, UNet, DetectNet) and achieved best detection score of 95% (F1) with fully convolutional ResNet-50.

Employment

Student Tutor	Technical University of Munich	Oct 2017 – Present
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Tracking and Detection in Computer Vision (IN2210) †

- The course is regularly offered to master students at TU Munich and is attended by more than 100 students.
- Involved in creating assignments for the course and helped students with the homework.

Machine Learning Engineer‡	Logivations Gmbh	April 2017 - Present
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Identification Workplace

- Applied various object detection algorithms (RFCN, Faster RCNN, Yolo etc.) for detecting different warehouse objects.
- Designed and implemented framework to integrate and deploy new models easily across different platforms.

Machine Learning Engineer †	Terraloupe Gmbh	Aug 2016 - April 2017
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Roof Object Segmentation (Python, Keras, Shapely)

- Experimented with various deep convolutional network architectures (PSPNet, UNet etc.) for semantic segmentation of roof objects (roof, chimney etc.) from aerial images.
- Implemented various computational geometric algorithms (polygon merge, line merge etc.) to generate refined shape boundaries for detected objects.

Software Development Engineer	Amazon, India	Oct 2014 – Oct 2015
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Missed Call Based Expiry (Java, SQS, DynamoDB)

- Developed an application which sends notifications(SMS, email) to customers for older ads live on jungle.com and customers can then delete their ads by giving a missed call on a toll free number.
- Using this mechanism, the Ad Defect Rate on jungle.com went down by 15%.

Senior Software Developer	Drishti Soft Solutions, India	June 2012 – Sept 2014
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REST API for Ameyo (Java, Xtend, Jersey)

- Designed REST based APIs for Ameyo (Drishti's call center software suite). The APIs were modeled in ecore domain model and wrote a code generator plugin in eclipse for generating Java code for APIs.
- This API provided the framework to develop call center applications easily.

Stats Manager (Java, H2)

- Designed and implemented a module for generating real time call center statistics.
- The module listened to call center application events and maintained in-memory database of stats which could be consumed by API calls or by subscribing to notifications.

* <http://campar.in.tum.de/Chair/ResearchIssueComputerVision>

† <http://campar.in.tum.de/Chair/TeachingWs17TDCV>

‡ Work Student

Education

Munich, Germany	Technical University of Munich	Oct 2015 – Mar 2018
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- M.Sc. in Informatics, GPA: 1.9/1.0
- Graduate Coursework: Machine Learning; Variational Methods; Deep Learning for Computer Vision; Vision Based Navigation; Programming Languages; Tracking and Detection

Hamirpur, India	National Institute of Technology	July 2008 – May 2012
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- B.Tech. in Computer Science and Engineering, CGPA: 7.69/10
- Undergraduate Coursework: Object Oriented Programming; Data Structure and Algorithms; Theory of Computation; Operating System; Computer Networks

Additional Experience and Awards

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- **Third Prize, Jungle Hackathon:** Participated in annual hackathon at Amazon and won third prize in Hackathon'15.
 - **Excellence Award:** Awarded with Drishti Excellence Award in October 2013, for gaining domain knowledge quickly and delivering projects on time.
 - Mentored interns and took training sessions of new employees at Drishti and Amazon.

Languages and Technologies

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- Python (Advanced); Java (Advanced); C++ (Intermediate); C (Intermediate); Matlab (Basic)
 - Tensorflow; OpenCV; ROS; REST

References

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- [1] Anonymous. "Predicting Multiple Actions for Stochastic Continuous Control". In: *International Conference on Learning Representations* (2018). URL: <https://openreview.net/pdf?id=B10ZpbWCZ>.
 - [2] Markus Rempfler et al. "Cell Lineage Tracing in Lens-free Microscopy Videos". In: *MICCAI*. 2017.