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Ayush K. Rai

Graduate Student, Artificial Intelligence, Ecole CentraleSupelec Paris

Education

Ecole CentraleSupelec, University of Paris-Saclay, Paris, France
Master of Science (MSc) , Artificial Intelligence *Sep' 18 - Jan' 20*
Master's Thesis: Human Action Recognition in Professional Environment
Current GPA: 16.01/20.0

LNM Institute of Information Technology, Jaipur, India
Bachelor of Technology, Electronics and Communication Engineering *Jul' 11 - May' 15*
Bachelor's Thesis: 3D Reconstruction of a Scene using Stereo and Multiview Images
GPA: 7.18/10.0

Research & Work Experience

Research Intern — Centre for Robotics, Mines ParisTech, Paris
Supervisor : Dr. Sotiris Manitsaris, Senior Researcher, Mines ParisTech *June'19 - Present*

- Currently working on appearance and pose based action recognition techniques for identifying actions performed by workers in Professional Environments (part of European H2020 - Mingei and Collaborate Project)

Deep Learning Engineer (Software Development)
StegoSOC Cloud Security Inc (Cloudadic Intelligent Solutions), Bangalore *Feb'17 - June'18*

- Worked on text localization and recognition problem (extended OCR) by implementing end to end trainable CNN & LSTM based deep learning models using PyTorch.
- Built a pipeline for generating synthetic & artificial data for text recognition problem and used it to train a supervised deep learning model in order to improve the efficiency of OCR system.
- Also engaged in designing Machine Learning systems to aid Security Analysts to identify probable Cyber threats, attack patterns and anomalous user-behavior in Cyber Physical Systems.

Data Science Intern
Cube26 Software Pvt Ltd (Acquired by Paytm), New Delhi *Jan'16 - July '16*

- Worked on Image Classification problem by finetuning various ImageNet pretrained CNN based models like AlexNet, VGG-16,19 and ResNet-152 using Caffe. Dataset Used : Yelp Restaurant, LSUN 2015 dataset.[Link].
- Also participated in LSUN 2016 Challenge (Scene Classification) and obtained a top 1 accuracy of 83.02 on the test dataset.[Link].

Research Associate/Intern — IIITD, New Delhi
Supervisor : Dr. Saket Anand, Assistant Professor, IIIT-Delhi *May '15 - Nov '15*

- Involved in Stereo Correspondence and Lane Marker Detection modules of IIITDs project on Autonomous Car (Spark The Rise : Driverless Car Challenge) for Indian roads.
- Implemented Semi Global Matching for disparity map computation and spline fitting & hough line transform for lane marker detection. Analyzed results on public stereo and lane datasets (Middlebury stereo, KITTI, Malaga urban etc). [Code]

Research & Academic Projects

Instance Level Object Segmentation in Videos
Graduate Course : Introduction to Visual Computing (Ecole CentraleSupelec) Jan '19 - Mar '19

- Worked on the problem of Instance Level Object Segmentation in videos using Mask-RCNN Architecture. This work is based on CVPR 2018 WAD Video Segmentation Kaggle Challenge.
- [Report]

Learning to Play TORCS using Deep-RL
Graduate Course : Reinforcement Learning (Ecole CentraleSupelec) *Jan '19 - Apr '19*

- Worked on a project to learn to drive in TORCS Racing Simulator using deep reinforcement learning techniques like Deep Deterministic Policy Gradient (Actor-Critic Based Method).
- [Report]

Music Genre Classification using Machine Learning
Graduate Course : Foundations of Machine Learning (Ecole CentraleSupelec) Sept '18 - Dec '18

- Worked on music genre classification problem by extracting acoustic and audio features by applying various machine learning techniques and deep learning techniques on Free Music Archive Data [FMA]
- [Code] [Report]

Attention-based Graph Neural Networks for Semi-Supervised Fake News Detection
Graduate Course : Network Science Analytics (Ecole CentraleSupelec) *Dec '18 - Jan '19*

- Applied text classification for fake news detection with small amount of labeled data (Semi-Supervised Learning) using a graph neural network method based on attention. Results were obtained on public datasets like Cora, Pubmed and fake news dataset like Buzzfeed Political News.
- [Code] [Extended Report]

Bachelor's Thesis : 3D Reconstruction of a Scene using Stereo/Multiview Images
Supervisor : Dr. Sonam Nahar, Assistant Professor, LNMIIT *Dec '14 - May '15*

- Reconstructed the 3D view of a scene using stereo/multiview images with known intrinsic camera calibration parameters using the technique of Structure from Motion.
- Reprojection error was used as the evaluation metric and results were evaluated on EPFL Multi-view Stereo Dataset
- [Code] [Bachelor's Thesis]

Computer Skills

Languages Known: C, C++, Python, R.
Software Packages: Caffe, PyTorch, Robot Operating System, Matlab, Keras, LaTex.

Relevant Courses

Mathematics: Scientific Computing for Engineers, Probability Theory and Stochastic Processes, Graph Theory, Foundations of Optimization Techniques.
Computer Science: Computer Programming, Data Structures and Algorithms, Computer Networks.
Data Science: Network Science Analytics, Big Data Algorithms and Techniques
Signal Processing: Signal System & Control, Digital Signal Processing, Information Theory and Coding.
Artificial Intelligence: Foundations of Machine Learning, Foundations of Artificial Intelligence, Foundations of Deep Learning.

Other Activities

Content Writer - Actively blogging on my personal website and Linkedin on variety of topics like education, business intelligence, entrepreneurship, data science and artificial intelligence. [Blog Link].

References

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