Kumar Shridhar

kumar-shridhar.github.io • shridhar.stark@gmail.com • +49 176 77659867
Kurt-Schumacher Strasse 16, Kaiserslautern, Germany 67663

Experience

- **BOTSUPPLY** — **Copenhagen, Denmark**
  Chief AI Scientist — *12/2016 – Present*
  - Developed a Natural Language Processing Framework [1] from scratch in 40+ languages that powers all the customers chatbots at BotSupply[2].
  - Developed and trained models for Intent classification, Entity recognition, Sentiment Analysis, Language Translation, POS tagging that are on par with the state-of-the-art models.
  - Designed architectures for handling imbalanced datasets, improving performance with continuous learning over feedback and automated selection of the best threshold.
  - Gathered data and feedbacks from real users, crowd-sourced annotations, worked with linguists and designers to improve the whole conversational flow in chatbots.
  - My current work focuses on learning representations from non-labeled datasets in an unsupervised manner that generalizes well to any tasks when fine-tuned upon.
- **INSIDERS TECHNOLOGIES** — **Kaiserslautern, Germany**
  Research Assistant — *01/2018 – 09/2018*
  - Worked with the Ovation Machine Learning Team that handles big data, reads and understands the content and interacts with end users through Conversational Intelligent Bots.
  - My work involved developing the most suitable and accurate architectures for different clients and improving the model performance on scarce datasets.
  - Contributed to Ovation Framework for Conversational Intelligence [3] in collaboration with Mindgarage and participated in Ovation Summer Academy 2017.
- **MINDGARAGE** — **Kaiserslautern, Germany**
  Researcher — *2016 – Present*
  - Collaborating and researching on various deep learning algorithms like Bayesian Neural Networks, Memory and Attention models and Object detection.
  - Part of organizational activities at Mindgarage: Assisting students' projects and masters thesis, organizing hackathons and research colloquiums, and in website and github maintenance.
  - Assisted in organizing the coursework and assignments for *Very Deep Learning* [4] lectures at TU Kaiserslautern under Prof. Marcus Liwicki.
- **WHIZLEADS** — **Sydney, Australia**
  Machine Learning Engineer — *10/2016 – 12/2016*
  - Worked in development of a suite of sales solutions: insights about clients, lead generation, task and invoice management, and social media integration.
  - Used machine learning algorithms to generate up to date and meaningful insights about clients' personalities, mood, consumer needs, language style and values using social media data.
  - Made the solution to work in real time (with every update on social media) to be displayed in the application.

Publications

1. Felix Laumann, **Kumar Shridhar**, Adrian Llopart Maurin (2018). Bayesian Convolutional Neural Networks. arXiv preprint arXiv:1806.05978v2.

[1] https://www.botsupply.ai/natural-language-processing
[2] https://www.botsupply.ai/
[3] https://github.com/mindgarage/Ovation
[4] https://www.informatik.uni-kl.de/en/studium/lehrveranstaltungen/modulhb/#mod-89-7157

Education

- **University of Kaiserslautern** — **Kaiserslautern, Germany**
  Department of Computer Science, Masters — *04/2016 – Present*
  - •Major in Computer Science •Minor in Psychology
  - My curriculum [5]includes these subjects but not limited to: Machine Learning I, Very Deep Learning, Applications of Artificial Intelligence, Social Web Mining, 2D Computer Vision, Collaborative Intelligence, Embedded Intelligence, Document and Content Analysis, Linguistics and Language Processing and Neural Basis of Brain.
  - The coursework gave a deeper understanding in the areas of artificial intelligence, machine learning, pattern recognition, and computer vision.
- **Fast.ai** — **International Fellowship Student**
  Deep Learning — *2017 – 2017*
  - I learned to apply cutting-edge Deep Learning methods for Natural Language Processing, Computer Vision and Recommendation Systems to achieve state of the art results more efficiently.
  - The course helped a lot in understanding and experimenting with more deeply connected architectures with less computational power and to understand the underline thought behind to further improve it. The primary library used was PyTorch which provides great flexibility in experimenting with new things.

Projects

- **Bayesian ConvNet**
  Bayesian Convolutional Neural Network based on Bayes by Backprop in PyTorch
  - A proposed Bayes by Backprop CNN framework with various network architectures that performs comparable to convolutional neural networks with point-estimates weights. This work symbolizes the extension of the group of Bayesian neural networks to CNN.
  - `https://github.com/kumar-shridhar/PyTorch-BayesianCNN`
- **Language understanding by Unsupervised Bayesian Networks**
  Train Bayesian NN in Unsupervised manner and fine-tune it in supervised fashion
  - Posteriors learned over unsupervised training will be used as priors when fine tuning on datasets in supervised fashion. Model already having a basic understanding of the task can generalize better. Same model to be used to learn many language tasks (Sentiment Analysis, Classification and so on..)
  - `GitHub:ComingSoon`
- **Know your Intent: Semantic Hashing as Featurizer**
  Semantic Hashing for Robust Text Classification with small data-sets
  - Using Semantic Hashing technique inspired from Deep Semantic Similarity model to overcome problems of out-of-vocabulary terms and spelling mistakes in small datasets for Intent Classification task. This work depends on using hash values as featurizers. State-of-the-art results were achieved on three datasets (AskUbuntu, WebApplication and Chatbot)
  - `https://github.com/kumar-shridhar/HackathonLulea`
- **Text Super Resolution**
  Superresolution using an efficient sub-pixel convolutional neural network in PyTorch
  - Super resolution of text documents using efficient sub-pixel convolutional neural network to improve the performance of OCR. This work was done as a part of Hackathon organized at Mindgarage.
  - `https://github.com/kumar-shridhar/super_resolution_PyTorch`
- **Political Affiliation Prediction - Twitter**
  Predicting Political Affiliation of users based on Twitter Data (Tweets) in TensorFlow
  - Users' affiliation towards a German political party was predicted using word embeddings as featurizers and a CNN as a classifier. Results were further analyzed and a short paper and poster were presented. This work was a part of my academic curriculum.
  - `https://github.com/kumar-shridhar/Twitter_Political_Party_Prediction`

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[5] `https://www.cs.uni-kl.de/en/studium/studiengaenge/bm-inf/sp.ma/`

Certificates and awards

- **Kaggle** Top 1% – Plant Seedling Identification *11/2017 – Present*
- **Medium** Top Writer – Artificial Intelligence *07/2017 – 09/2017*
- Member of Botsupply IBM Award Winner 2017 Team *11/2017*

Languages and Technologies

Programming Languages: Python, C, C++
Technologies: PyTorch, Keras, TensorFlow, SciPy, NumPy, scikit-learn, NLTK, RASA, SpaCy, CoreNLP, UNIX, Docker, Git, LaTeX
Natural Languages: Native in English and Hindi, intermediate in German
Open Source Contributions: Facebook Duckling [6], ContinualAI [7]

Research Collaborations

- **Mobile Industrial Robots**
  Improvement of Object detection and localization systems in Mobile Industrial Robots
  - Worked in the area of real-time Object detection in Mobile Industrial Robots using Nvidia Jetson devices and Raspberry Pi v2 cameras. Further, experimentation with Intel Movidius devices to reduce overall cost without a reduction in overall performance and accuracy.
- **Jatana AI**
  Research on learning from feedbacks in a coversational intelligent system
  - Working together with researchers at Jatana to make the model learn from customer feedbacks automatically in order to improve the confidence of the low confidence queries replies.

Organizational activities

- **Copenhagen Chatbots and AI Meetup: Organizer** *07/2017 – Present*
  - Organized several chatbots and AI meetups [8] to connect researchers, and industry professionals.
- **MindStorm Open Research Forum: Organizer** *01/2018 – 05/2018*
  - Organized open research forums at Mindgarage [9] to connect students and researchers to discuss and solve open AI problems.
- **Hackathons: Organizer** *10/2017 – 04/2018*
  - Organized open end hackathons at Mindgarage [10] with the aim to find the best solution for a machine learning challenge in one night.

Talks and Presentations

- Copenhagen Chatbots and AI Meetup, June 2017 - Present : Best practices, ongoing research in NLP and combination of chatbots with design process to achieve best results.
- Luleå Technical University, Luleå Sweden, August 2018: Know your Intent: Intent classification using Semantic Hashing
- iMuSciCA, Athens Greece, May 2018: Generative Adversarial Networks for Semantic Segmentation
- Technical University Kaiserslautern, March 2018: Empirical Evaluation of DenseNet
- Ovation Summer Academy, September 2017: NER using synthetic datasets
- TechFestival, Copenhagen Denmark, September 2017: Generative AI

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[6] https://github.com/kumar-shridhar/duckling
[7] https://github.com/ContinualAI
[8] https://www.facebook.com/groups/141962696210850/
[9] https://www.facebook.com/events/346701135850291/
[10] https://www.facebook.com/events/602280003465979/