

# Manu Somasagar Kamalakar

Machine Learning Researcher / Software Engineer

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🔗 <https://manu-sk.github.io/>

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## Professional Experience

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10/2021 – present  
Kaiserslautern,  
Germany

### Machine Learning Researcher

*Fraunhofer Institute for Industrial Mathematics (ITWM)*

- Working as a machine learning expert for a prominent European vehicle manufacturer, focusing on cutting-edge ML algorithms and techniques.
- Built an advanced predictive application to improve maintenance planning, minimize vehicle downtime, and optimize budget allocation through integrated cost analysis and forecasting features.
- Designed an interactive data analysis tool empowering analysts and auditors with independent analyses and valuable insights through data visualization and analytics techniques.
- Utilized unsupervised machine learning techniques to create a robust abnormality detection system for billing statements.

01/2020 – 09/2021  
Kaiserslautern,  
Germany

### Scientific Student Assistant

*Fraunhofer Institute for Industrial Mathematics (ITWM)*

- Architecture and implementation of AI infrastructure for a Federated Machine Learning IoT use case
- Machine Learning pipelines and deployment in Kubernetes

08/2017 – 08/2019  
Bengaluru, India

### Software Engineer – DevOps

*Société Générale Global Solution Centre*

- Developed a robust application using the Python-Flask framework to efficiently migrate source code from an SVN repository to GitHub, streamlining version control processes and facilitating code collaboration.
- Played a vital role as a member of the DevOps transformation team, actively coaching project teams about DevOps principles and fostering a culture of continuous integration and continuous deployment.
- Set up an end-to-end CI-CD pipeline for multiple project teams, leveraging industry best practices and automation techniques to ensure rapid and reliable application delivery.

04/2017 – 08/2017  
Bengaluru, India

### Young Graduate

*Société Générale Global Solution Centre*

- Employed industry-standard testing tools, including Selenium and UFT (Unified Functional Testing), to automate the testing process, significantly reducing manual effort and ensuring high-quality software releases.

## Education

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10/2019 – 09/2021  
Kaiserslautern,  
Germany

### Master's in Computer Science

*Technical University of Kaiserslautern (RPTU)*

Seminar: Photorealistic Fakes with Generative Adversarial Networks

08/2012 – 08/2016  
Bengaluru, India

### Bachelor of Engineering in Computer Science & Engineering

*K.S. Institute of Technology*

Grade: 75.24% (Distinction)

## Projects

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### Federated Learning for Fraud Detection (Master's Thesis)

- Applied federated learning (FL) to identify frauds in the FinTech domain, addressing data availability, security, and privacy challenges.
- Compared various data sampling techniques, aggregation algorithms, and model performance in a federated learning environment, showcasing FL's potential for effective fraud detection while preserving data privacy and security.

### Deep Digit Recognition

- Implemented a digit detection system using neural networks in the Keras framework with TensorFlow backend and OpenCV.
- Utilized the MSER algorithm and CNN classifier to detect digits from natural scene images, enhancing accuracy with the CLAHE technique applied to the dataset.

### Applied Data Science on COVID-19 Data with SIR Simulations

- Developed an interactive UI providing comprehensive COVID-19 statistics, growth, recovery, and death information.
- Implemented a sophisticated prediction model for estimating COVID-19 cases in the next week for selected countries, aiding informed decision-making and public health planning.

### A Data Mapping Strategy for Parallel Data Mining Nodes in Grid connected to a Storage Cloud

- Created an efficient architecture to reduce data processing computation time through task distribution across multiple systems using a map-reduce mechanism.
- Developed a private storage cloud from scratch to ensure data availability and optimize system performance and reliability.

## Technical Skills

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- Machine Learning: PyTorch, TensorFlow, scikit-learn, NumPy, Pandas
- Development Tools & Platforms: Anaconda, PyCharm, Eclipse, Android Studio, Visual Studio
- DevOps: Git, Jenkins, Nexus, Ansible, Docker
- Databases: MySQL
- Operating Systems: Linux, Ubuntu, Windows
- Others: Python, Deep Learning, Research

## Certifications and Conferences

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- Attended the International Conference on Machine Learning in 2023.
- Oracle Certified Professional, Java SE 6 Programmer.
- Achieved an IELTS score of Band 7.
- Participated in the All India DevOps Conference conducted by the DevOps Institute.
- Proposed a topic titled "Marrying Machine Learning with DevOps" for Agile-day 2019 in Washington DC.

## Interpersonal Skills

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- I have collaborated effectively with cross-functional teams and stakeholders as a DevOps engineer, ensuring smooth project execution, which improved my communication skills.
- I like to set and meet deadlines, ensuring timely project completion and delivery.
- I enjoy establishing both immediate and future goals, diligently striving to accomplish them to promote project triumph.

## References

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**Dr. Stefanie Grimm**, *Research Coordinator - Data Science*, Fraunhofer ITWM  
stefanie.grimm@itwm.fraunhofer.de

**Nivarti Jayaram**, *Chief Data Officer*, Societe Generale Global Solution Centre