ABHILASH GOPALAKRISHNAN

Curriculum Vitae

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Profile Summary

Driven by curiosity, Abhilash is passionate about continous learning and experimentation, thus translating emerging technologies to societal benefit. In his career of over 23 years he has been fortunate as Systems Architect in building innovative world class products. His efforts at ABB Research and Development, as Principal Engineer in Power and Industrial Automation Systems, culminated in a platform, 6 granted patents, over 20 publications and a great team. At Learnovate Centre, Trinity College, Dublin, lead the 21st century skills learning platform for maker. Latest, he was Senior Architect with Part Analytics, a SaaS Startup building supply chain 4.0 platform. He holds a Mechanical Engineering degree from Amrita and a Masters in Software Systems from BITS Pilani. Currently at the last leg of his PhD in Computer Science from Amrita Vishwa Vidyapeetham with 2 publications and 2 patents filed.

He holds a professional certificate in Architecture and Systems Engineering from Massachusetts Institute of Technology (MIT), a PG Certificate in Digital Manufacturing and Smart Factories from IISc and a professional certificate in Industry 4.0 from HKPolyU. He is a Senior Member of IEEE, a member of ACM, INCOSE, and TiE and CSI. He has mentored working professionals on Architecture and Design and Reinforcement Learning.

Education

2022–present	**Doing PhD, Computer Science & Engineering**, *Amrita Vishwa Vidyapeetham*, Kollam, Kerala. Determinism in IoT Networks, Communication Network Simulation, Reinforcement Learning , *Courses:*, Linear Algebra,Machine Learning , Reinforcement Learning, Research Methodology.
2008–2011 :	**Master of Science, Software Systems**, *Birla Institite of Technology & Science* , Pilani.
1994–1998 :	**Bachelor of Engineering, Mechanical Engineering**, *Bharathiar University*, Coimbatore.

Patents - Granted

2024	**EP4046368** in *A Method for Configuring an Intelligent Electronic Device.*
2022	**EP3748811** in *A Method for Configuring an Intelligent Electronic Device and a System thereof.*
2019	**EP3938970** in *A System and Method Of Detecting Faults in Intelligent Electronic Devices .*
2018	**US Patent No: 10095923** in *Method and System for Configuring Devices of a Control System based on Engineering Graphic Object.*
2018	**EP2831682** in *A Method for Engineering a Distributed Control System.*
2015	**US Patent No: 8983820** in *A Method and a System for Simulation in a Substation.*

Patents - Filed

2025	**202541131232** in *Orchestrator-Agent System For Cross-Domain Latency Control In Hybrid Networks.*
2024	**202441075275** in *System And Method For Integrated Wired-Wireless Time-Sensitive Networking.*

Research and Development Experience

Part Analytics, Bangalore

Role : **Senior Software Architect**

Nov 2021 –
May 2022
Leading and guiding Technology and Architecture of a SaaS platform.
Architected and led refactoring on cloud (AWS), applying technology stacks Python for Data Science and Lambda functions, AngularJS, NodeJs for API Ecosystem, and Postgres and MongoDb for Data. In 2024 involved in Penetration Testing Strategy and solution approach for ISO 27001, focusing on Resilience.

Learnovate Centre, Trinity College Dublin

Role : **Senior Technical Design Specialist**

May,2020 –
Oct 2021
Architecture and Design of Educational Technology Platform, *Assessmake Platform*.
Led the team which Architected, Designed, and deployed on cloud, Assessmake Platform, a digital platform for 21st Century Skills applying latest technology stacks applying Python, JavaScript, ReactJs, NodeJs and MongoDb with python libraries for natural language processing to achieve delighting user experience.

ABB, Bangalore

Role : **Principal Engineer**

2015 –
Nov,2019
Architecture and Design of Embedded Platform for Distribution Relays, *REx610 Platform* .
Incubate, digital platform for Distribution Automation from initial vision to architecture runway development and delivery. Led 20-members cross functional team, building web-based product life cycle tool, engineering tool and embedded software. Quality approach using continuous integration with testing. Piloted digital twin/services on Azure and microservices integrating C++, C#, .NET, Python, PGSQL based services. Ensured minimum CyberSecurity requirements for the products.

Role : **Associate Principal Engineer**

2014 – 2015
Architecture and Design of Microgrid Consulting Tools.
Formulated vision and road map and architected Microgrid consulting tools - offline and web subsystems, applying RESTful architecture and .NET and WCF, SQL Server and Entity Framework. Architected, planned and deployed Global Microgrid Consulting Tools enabling faster consulting turnaround time.

2013 – 2014
Microgrid Controller CyberSecurity.
Doing deep dive analysis identified the root case of Device Issue in Microgrid Controller working closely with the device cybersecurity lab and traveled to Darwin, Australia and worked with the team to resolve and verify the issue leading to release of the product in 6 months time.

Role : **Technical Specialist**

2012 – 2014
Cyber Security Architecture and Intellectual Property Strategy.
Architected and delivered APIs for cyber security in C++ and .NET for Role Based Access Control. Identified the Patent landscape and defined the Patent strategy for SPlus Engineering.

Role : **Technical Manager**

2011 – 2012
Architecture for Integrated Testing Tool 9-2.
After discussion with the research team at ABB CRC, Datwill Switzerland, translated a research project to a full fledged Simulation Tool and participated in the demonstration of the tool at Hannover Fair.

2005 – 2011
Architecture for Common Platform Connectivity Packages.
Architected a novel architecture and platform for Connectivity Packages using .NET, C#, SQL Server, leading to 6 different variants built using the platform. A core member of the Common Platform architecture team spanning Sweden, Finland and India.

LG CNS Global, Bangalore

Role : **System Analyst**

2004 – 2005
Technical Lead for Search Module.
Technical Lead for Search module applying design patterns for BBC The Motion Gallery web pages in C# and ASP.NET.

Cognizant Technology Solutions, Bangalore

Role : **Associate**

2004 − 2005	**Senior Developer and Designer**.
	Led Modules and Deployment Package development. Also served as Business Analyst for Intuit Next Gen.
	Time Technologies, Lucid Technologies, Coimbatore and BNS Solutions, Trivandrum
Role :	**Software Engineer/Developer**
1999 − 2004	**Software Engineer**.
	Software Engineer involved in development of Web and Windows Applications using Microsoft Technologies like Visual Basic and later .NET

Achievements & Recognitions

2026	**Speaker: Being Superhuman with AI** in *Industry Conclave* GITAM University, Bangalore
2019	**Mentor & Jury** in *Smart India Hackathon 2019* Kochi, India
2018	**Keynote Speaker** in *China HMI & UX/UI Summit*Shanghai, China.
2013	**Senior Member** in *IEEE* Bangalore, India.
2011	**Platinum Award** in *Architectural Leadership ABB 2011* Bangalore, India.

Skills

Software, Systems Modeling skills

Programming	C++, C#, Python, JavaScript
Web	HTML 5, Flask, Javascript, Node and Express, ReactJs, AngularJs
Services	SOA, RESTful, Microservices
Cloud	Microsoft Azure, Amazon AWS
Containers	Docker, Podman
Cybersecurity	ISO 27001, Portswigger Burpsuite, OWASP Top 10, SIEM Integration
Modeling	Enterprise Architect with UML
Frameworks	TOGAF, Systems Engineering
OS	Linux Ubuntu 22.04, Windows 7-10, 2012 Server.
Database	MySQL, SQL Server, MongoDb, Redis, Postgres
Architecture and Design	Software Architecture, Platform Architecture, Systems Architecture
Application Layers	Web and SaaS Architectures, Embedded Systems
Frontier Technologies	Wi-Fi 6, 5G, Artificial Intelligence and Vibe Coding
Continuous Integration	Cruise Control.NET, Jenkins, Ansible

Domain Knowledge

Power Systems	Substation Automation, Standards like IEC 61850, Renewable and Microgrid Control Systems
Industrial Automation	Power Generation Automation, Standards like IEC 61131,61499, Renewable and Microgrid Control Systems
Cybersecurity	NERC CIP, IEC 61443

R&D Skills

Intellectual Property	Patent Drafting, Intellectual Property Landscaping and Strategy
Leadership	Engineering Management, Technology Management

AI/ML Skills

Machine Learning	Supervised, Probabilistic, Deep Learning, Reinforcement Learning
Gen AI Tools	ChatGPT, Claude Code

Training and Certification

Professional Certificates

Mar 2021	**PG Level Certificate, IISc**, *Digital Manufacturing and Smart Factories*.
Mar 2020	**edX, HKPolyU**, *Business Excellence in a knowledge-driven Industry 4.0 world*.
Jan 2020	**edX, uc3m**, *INF 1.x The Software Architects Code : Building the Digital world*.
2019	**MIT Professional Certificate**, *Data Science and Big Data Analytics*.
Nov 2019	**The Open Group**, *TOGAF 9 Foundation*.
Apr 2018	**Word Intellectual Property Organization (WIPO)**, *Advanced Course on Patent Drafting*.
Mar 2018	**MIT Professional Certificate**, *Architecture and Systems Engineering*.

Trainings

2024	**IEEE**, *An Overview of High-Efficiency Wi-Fi (Wi-Fi 6) PHY & MAC Layer* .
2023	**University of Colarado System**, *Packet Switching Networks and Algorithms* .
2023	**Coursera, 28 Digital**, *Mastering Digital Twins*.
2023	**Coursera, Stanford University and DeepLearning.AI**, *Machine Learning Specialization* .
May 2021	**IEEE**, *Innovation Management and Intellectual Property*.
Apr 2021	**University of Maryland**, *Cloud Computing Engineering and Management*.
Jan 2021	**edX,Curtin University**, *IOT3x: IoT Networks and Protocols*.
Nov 2020	**edX,University of Michigan**, *LeadEd502x: Designing and Leading Learning Systems*.
Verified Certificate for Designing and Leading Learning Systems	
Aug 2019	**ABB**, *Emerging Leaders Program*.
Dec 2017	**edX, UTAustin**, *Embedded Systems - Shape The World: Microcontroller Input/output*.
Mar 2017	**MITx**, *Introduction to Computer Science and Programming Using Python*.
Jan 2019	**IEEE**, *Embedded Computing for IoT Systems*.
2016	**MITx**, *The Iterative Innovation Process*.
Jul 2016	**MIT Sloan, Emeritus**, *Innovation of Products and Services: MIT's Approach to Design Thinking*.

Publications

Journal Article

2024	**Abhilash Gopalakrishnan, Subhasri Duttagupta, Deepak Nadig** , Scheduling with Time Aware Shaping in Integrated Ethernet and Wi-Fi Networks, In *Springer Nature*.
2021	**Abhilash Gopalakrishnan**, Reinventing Technology and Innovation Management Using a Three-Dimensional Approach, In *IEEE Engineering Management Review*.

In Conference Proceedings

2024	Subhasri Duttagupta Gopalakrishnan, Abhilash. Scheduling in time-sensitive networks using deep reinforcement learning. In *Applied Soft Computing and Communication Networks. (ACN 2023)*, volume 966, 2024.

2017 T Theodosia Lourdes and Abhilash Gopalakrishnan. Co-design applied: Design of open hardware based human machine interface. In *2017 2nd International Conference on Communication and Electronics Systems (ICCES)*, pages 104–108, 2017.

2017 Abhilash Gopalakrishnan and Abhinna Chandra Biswal. Quiver — an intelligent decision support system for software architecture and design. In *2017 International Conference On Smart Technologies For Smart Nation (SmartTechCon)*, pages 1286–1291, 2017.

2016 Abhilash Gopalakrishnan and Abhinna Chandra Biswal. Applications of emerging communication trends in automation. In *2016 IEEE 6th International Conference on Power Systems (ICPS)*, pages 1–6, 2016.

2016 Jan Olaf Blech, Lasith Fernando, Keith Foster, G Abhilash, and SD Sudarsan. Spatio-temporal reasoning and decision support for smart energy systems. In *2016 IEEE 21st International Conference on Emerging Technologies and Factory Automation (ETFA)*, pages 1–8, 2016.

2015 Abhilash Gopalakrishnan. Improving decision making and reuse in software systems using domain specific reference architectures. In *2015 IEEE International Conference on Electronics, Computing and Communication Technologies (CONECCT)*, pages 1–6, 2015.

2014 Arun Parmar, Jonathan Gnanadhas, T. T Mini, G Abhilash, and Abhinna Chandra Biswal. Multi-agent approach for anomaly detection in automation networks. In *International Conference on Circuits, Communication, Control and Computing*, pages 225–230, 2014.

2014 Abhilash Gopalakrishnan, Jithin K.P., and Abhinna Chandra Biswal. Industrial automation system on device (indasod) -a device modeling industrial automation scenarios. In *2014 Annual IEEE India Conference (INDICON)*, pages 1–6, 2014.

2014 Abhilash Gopalakrishnan and Abhinna Chandra Biswal. Animated operational scenarios for microgrid systems using scenario visualization and simulation tools. In *2014 IEEE Global Humanitarian Technology Conference - South Asia Satellite (GHTC-SAS)*, pages 123–128, 2014.

2013 Abhilash Gopalakrishnan and Abhinna Chandra Biswal. Software based assistive systems in engineering education. In *2013 IEEE Global Humanitarian Technology Conference: South Asia Satellite (GHTC-SAS)*, pages 280–285, 2013.

Teaching Experience

Great Learning

Role : **Mentor for Advanced Software Engineering from IIT Madras**

Sep 2020 –
Sep 2021 Taught students over Great Learning Platform taking courses in Software Architecture and Design and Distributed Systems including Cloud and IoT. Rated highest among mentors and considered an excellent teacher and mentor applying innovative teaching methods with application examples in GitHub

Role : **Faculty for Amrita Ahead MCA program**

Oct 2023 –
Mar 2024 Taught Reinforcement Learning for students over Amrita Ahead Platform

References

Anoop Parapurath
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Associate Principal Engineer
ABB Global Industries and Services Ltd.
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