

I Am a Systems Engineer and I Do...

Deepaa Yoharani Ganesh



Why did you choose to be a Systems Engineer?

I chose to be a Systems Engineer due to my fascination with product development and the critical time-to-market factors. This role demands expertise in specific technical areas, a broad knowledge of products and systems, technical project management, system architecture, software development, and system integration. I relish the challenge of designing and perfecting complex systems to meet product goals, thus witnessing the positive impact on industrial and technological solutions, which motivates my career. Additionally, Systems Engineering is indispensable across various industries, including aerospace and other technologies, making it a dynamic and critical discipline for error-free delivery.

My current roles as a Systems Engineering Functional Manager, Technical Lead, MBSE Technology Enablement Engineering Lead, and QinetiQ-Mathworks Knowledge Network Lead, means I am responsible for systems engineers focusing on Model-Driven Systems Engineering, System and Model Based System Development Lifecycle processes, and the Digital Thread in the Model-Based Systems Engineering (MBSE) Tooling environment. With over thirty years of experience in the field of engineering, I have had the opportunity to work on research, innovations, and product development across a wide range of sectors and have found the Systems Engineering role to be both challenging and rewarding.

What education/qualifications do you have for Systems Engineering?

I hold a BEng (Hons) degree in Electrical and Electronics from the University of London, as well as Master's Degrees in Electronics, Measurements, Instrumentation, and Devices from London Southbank University, and a Master's in Systems Engineering from the University of London.

My educational qualifications have provided a strong foundation in Electrical and Electronics Engineering, which is relevant to Systems Engineering. I have also acquired significant knowledge and expertise in Systems Engineering through on-the-job training and various projects during my career.

In addition to my academic background, I have gained practical experience in Systems Engineering through my employment at multinational companies such as Thales, Philips, NXP, Jaguar Land Rover (JLR), and QinetiQ. These companies provided internal training programs linked to professional development, which further enriched my Systems Engineering expertise.

My background in Electronics Engineering has equipped me with advanced skills in Digital Signal Processing, Control Design, Embedded Systems, and Software Engineering. I have worked on projects spanning the Defence industry, Consumer Electronics, and Autonomous Vehicle development, where I specialized in mechatronics, software, ASIC, FPGA, and end-to-end delivery using Systems Engineering methodologies.

Throughout my career, I have been a member of professional organizations such as INCOSE (International Council on Systems Engineering) and IET (Institution of Engineering and Technology), which have contributed to my knowledge and network within the Systems Engineering community.

Additionally, I have published a conference paper for INCOSE in 2022 and have presented keynote speeches at conferences such as ASEC2022, ZUKEN Innovation Day, and Mathworks EXPO - Women in Tech. I also hold multiple patents in engineering related to Collision Avoidance, Digital Filtering, and Digital Servo Design.

What is it about Systems Engineering that you find so compelling?

What I find so compelling about Systems Engineering is its unique ability to offer a systematic approach to designing and managing end-to-end complex systems, resulting in error-free products. This approach allows engineers to communicate effectively with a diverse range of stakeholders, including customers who require a comprehensive understanding of a product's performance at every design stage. This understanding is crucial not only during initial procurement and acceptance but also throughout a product's lifecycle, helping with product development, defect identification, and performance assessment against evolving challenges.

The Systems Engineering lifecycle provides a structured framework for evaluating end-to-end system performance in both real and synthetic environments across a wide range of applications. Within the field of Systems Engineering, there are ample opportunities to create innovative solutions, enhance efficiency, and ensure the professional delivery of both functional and non-functional systems. My career in engineering has proven to be intellectually stimulating, life-enhancing, and extraordinarily exciting, especially within the context of challenging opportunities in a cutting-edge technical environment. I'm consistently inspired by the prospect of new projects and the potential to make a meaningful impact.

What advice would you give a Systems Engineer just starting out in their career?

Systems Engineering encompasses more than just requirements, design, architecture, implementation, analysis and testing. The application and integration aspect is a critical area in Systems Engineering, for which a practical knowledge of engineering is essential.

Therefore, an in-depth practical knowledge involving the relevant tools is recommended to enable you to create error-free products. The challenge for younger engineers is to seek out development projects which will extend their subject and technical knowledge and enhance their expertise.

Students at the onset of their careers should consider becoming experts in one or two domains as precursors to a wider spectrum of engineering projects.