



SKILLS IN UNIVERSITY AND INDUSTRY

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Abstract

The gap between academic preparation and industry expectations in the field of computer science necessitates a comprehensive understanding of skills required for both academic and professional success. This paper explores the skills required for success in computer science, combining insights from industry professionals Mr. Mohd Hakimi Iqmall and Mr. Nik Mohd Habibullah. It highlights the importance of balancing technical expertise with soft skills to meet industry demands and discusses how universities can bridge the gap between academic learning and professional expectations. Practical education, project-based learning and exposure to modern tools are emphasized as key strategies for preparing students for the evolving IT landscape.

Keywords: Computer science skills, Industry expectations, Soft skills, Technical skills, Academic preparation

Introduction

The rapid evolution of technology has created vast opportunities and challenges in computer science, requiring professionals to possess a mix of technical skills such as programming, system design, and algorithms and essential soft skills like communication, teamwork, and adaptability. However, a gap often exists between the skills taught in academic institutions and the practical demands of the industry. Graduates frequently struggle to meet workforce expectations, which prioritize both technical expertise and the ability to solve real-world problems collaboratively. This paper explores this skills gap by drawing on insights from industry experts Mr. Mohd Hakimi Iqmall and Mr. Nik Mohd Habibullah, who highlight the importance of balancing technical knowledge with interpersonal skills. It emphasizes the role of universities in bridging this divide through practical education, project-based learning, and exposure to modern tools. By aligning academic preparation with industry needs, graduates can excel in their careers and contribute to technological innovation.

Description of Speaker Experience

First Speaker - Mr. Mohd Hakimi Iqmall

Mr. Mohd Hakimi Iqmall is a **Project Manager and System Analyst** in the Innovation Department at UTM (Universiti Teknologi Malaysia) Digital, focusing on developing innovative systems for university staff. His academic journey reflects a strong passion for technology, beginning with studies at Sekolah Kebangsaan Taman Universiti 1 and Maktab Rendah Sains Mara Langkawi. Despite an initial offer to study psychology, he pursued a **Diploma in Computer Science (Multimedia)** at UTM Kuala Lumpur, specializing in Mixed Reality, Virtual Reality, and Augmented Reality, followed by a **Bachelor's Degree in Computer Science (Graphics and Multimedia)** at UTM.

Mr. Hakimi's professional career began with an internship at **ME-Tech Solution Sdn. Bhd.**, where he worked on developing a **Shift Simulator** and **3D (3-dimensional) animations**. He later joined **Okakichi Sdn. Bhd.** as a Programmer, contributing to the **Kingdom Ran** game, focusing on game animation and gaining expertise in Git version control. He also encountered challenges, such as a server issue caused by a code push, which taught him the importance of teamwork, resilience, and learning from mistakes. From 2019 to 2021, he served as a System Programmer at **UTM Research Computing**, working on projects such as **RADIS 4.0 (Research and Development Information System)** and **ICESys (Industry & Community Engagement System)**.

In 2021, Mr. Hakimi joined **UTM Digital**, where he has managed critical systems like the **Welfare Service System**, **Clinic Panel System** and **Payroll 2.0**. Notably, he led the development of the **SSPA System (Public Service Remuneration System)**, a high-priority project completed within three weeks. His expertise in system analysis, project management and technical innovation underscores his significant contributions to UTM's digital transformation and the broader field of technology.

Second Speaker - Mr. Nik Mohd Habibullah

Mr. Nik Mohd Habibullah is currently an accomplished and a performance oriented **Chief Operating Officer (COO)** at GetMe Technology PLT. He is also the **Chief Executive Officer (CEO)** of Micro Semiconductor Sdn Bhd and the co-founder of **getmehired.io** and **dialysismanager.io**. He mainly supervises the whole operations and workflow of the staff and is accountable to the company performance as a co-founder. He has been building a strong foundation in the Information System world since his university days where he studied in UTM as Computer Science student where he would work on his final year thesis with UTM library.

Mr. Nik mainly talks about the strategy of a university student on how to prepare for an internship. He introduces a technique called **IRPA (Identify, Research, Prepare, Apply) method** or known as Soul Searching as a way to ensure a smooth job application. For 'I', it represents

identify which means to know yourself and what your goals are for the future, he encouraged students to attempt on the Myers-Briggs Type Indicator (MBTI) in order that the job that one would choose matches with one's personality. Next is 'R', **research**. It explains that students should thoroughly do an investigation on the company that they would like to join before submitting the application to ensure a satisfying career journey and the company's goals are aligned with the personal's career aim. Following that is 'P' which means **prepare** that he strongly emphasizes as the most important step in the job application process. That is where GetMe Hired, a business that Mr. Nik himself co founded helps fresh graduates and students to build a CV (Curriculum Vitae) that is aligned with ATS (Applicant Tracking System) such that students can pass the ATS screening effortlessly. Lastly 'A', **apply**. Students can easily do this by using job portals such as LinkedIn, Jobstreet and Hiredly that are widely used by companies around the world to ease the process for students.

Basic Skills Required for Computer Science

Both **soft computer science skills and technical computer science skills are essential** for success in computer science. According to an article referenced by Aasheim, Lee & Williams (2009), soft skills such as interpersonal and management skills were found to be more important than technical skills. In contrast, another article reported that technical skills were the most highly valued in new hires. Referring to **Figure 1**, employers typically seek entry-level candidates who possess technical skills in **programming, system analysis, system testing, system design** and a variety of other competencies, alongside strong communication skills and industry knowledge (Adam Suhaimi, Rabiul Hasan, Hussin & Shah, 2012). These differing findings suggest that the importance of specific skills may vary depending on the focus of the research. Nevertheless, it is clear that **both soft and technical skills are undeniably critical** in the field of computer science.

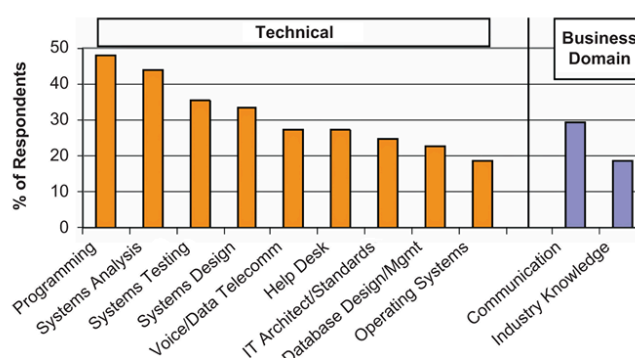


Figure 1: Technical skills and business domain skills required by employers.

Source: Adam Suhaimi, M., Rabiul Hasan, M., Hussin, H., & Shah, A. (2012). Information and communication technology workforce employability in Malaysia. *Campus-Wide Information Systems*, 29(2), 80–89.

<https://doi.org/10.1108/10650741211212340>

A survey conducted by Aasheim et al. (2009) targeted IT managers and faculty members, including assistant, associate, and full professors, among others, to identify the most important skills required. In contrast to the previous result given by Adam Suhaimi et al., this survey results revealed that **interpersonal skills ranked highest**, with an average score of 4.47 out of 5, followed by **personal skills, technical skills, organizational and managerial skills**, and, finally, **experience and GPA (Grade Point Average)** (Aasheim et al., 2009). These rankings demonstrate that soft skills, particularly interpersonal and personal skills, are viewed as more important than technical skills in the context of IT and computer science.

As the ICT and computer science workforce of the future, graduates are required to develop technical skills necessary to manage IT systems, as well as soft skills such as communication, teamwork and project management that are crucial for working efficiently in multidisciplinary teams and for addressing real-world problems.

Skills Required by Industry

Preparing university students to meet industry demands requires a combination of **technical and interpersonal skills** integrated into their education. According to Mr. Mohd Hakimi Ikmall, proficiency in **programming languages** like Python, Java, and C++, as well as familiarity with tools like Git and frameworks such as Laravel, are foundational for students entering the IT field. These technical skills, complemented by knowledge of **algorithms, database management and debugging techniques**, are vital for solving real-world problems and developing efficient systems (Aasheim et al., 2009). Additionally, understanding **security protocols and SDLC (Software Development Life Cycle) methodologies** helps students build systems that are both secure and scalable, aligning with industry requirements as highlighted in academic studies and training sessions. For instance, the **waterfall model** that is shown in Figure 2 was proposed by Royce in the year 1970 which is simple to comprehend and effective for initiating new projects (Alazzawi, A., & Rahmatullah, B., 2023).

Interpersonal and organizational skills play a crucial role in enabling students to transition effectively into the workforce. Traits such as **adaptability, communication and teamwork** are essential for aligning technical skills with business needs (Aasheim et al., 2009). As stated by Mr. Nik Mohd Habibullah, leadership development, gained through roles in **university projects and extracurricular activities**, fosters innovation and personal growth. Students are encouraged to engage in collaborative opportunities and project management exercises, preparing them for complex team dynamics in professional settings.

Universities must bridge the gap between academic preparation and industry expectations. Curriculum should integrate practical learning opportunities, including internships, project-based courses and exposure to **Agile or DevOps** methodologies, to prepare students for modern IT environments as noted by Mr. Mohd Hakimi Ikmall. These initiatives, combined with the use of tools such as **Visual Studio Code** and platforms like **Jira** for project management, ensure that students gain hands-on experience while enhancing their employability. By fostering both technical expertise and interpersonal capabilities, universities can equip students to meet the dynamic demands of the IT industry (Aasheim et al., 2009).

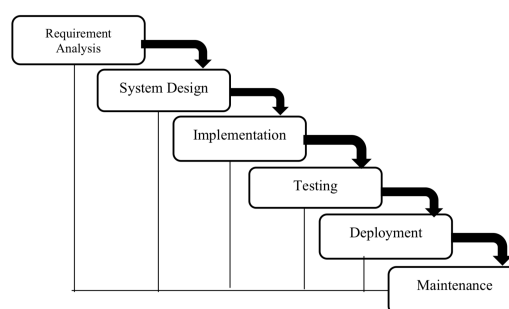






Figure 2: A Waterfall Model of SDLC.

Source: Alazzawi, A., & Rahmatullah, B. (2023). A comprehensive review of software development life cycle methodologies: Pros, cons, and future directions. *Iraqi Journal For Computer Science and Mathematics*, 4(4), 173-190. <https://doi.org/10.52866/ijcsm.2023.04.04.014>

Conclusion

The discussions with Mr. Mohd Hakimi Iqmall and Mr. Nik Mohd Habibullah emphasize the need for a balanced skill set in computer science. Combining technical abilities with interpersonal skills ensures graduates can adapt to evolving industry demands. Universities play a critical role in bridging the skills gap through hands-on learning, internships and exposure to current tools and methods. By fostering both technical expertise and teamwork, they can equip students to excel in real-world environments. Strengthening collaboration between academia and industry is essential for creating a workforce ready to drive innovation and meet future challenges.

Reflection

	<p>Through this industry talk, a deeper understanding was gained regarding the importance of mastering technical skills, such as programming and understanding SDLC methodologies, as well as essential management skills. These skills were highlighted as crucial not only for academic success but also for building a future career. Additionally, the value of stepping out of one's comfort zone was emphasized, reflecting the saying, "Life begins at the end of your comfort zone." To ensure success in Computer Science over the next four years, a focus will be placed on thoroughly understanding lectures while actively participating in activities that enhance technical skills, such as programming, and events aimed at developing communication, teamwork and problem-solving abilities.</p>
	<p>The industry talk focused on the need of equipping yourself with not only technical skills but also the management skill to build a strong foundation in the IT career. Furthermore, one should also have strong fundamentals on both of the skills in order to withstand the hardships that one would personally face while learning computer science in university and also when entering the workforce later on especially in today's dynamic and work environment, it is noteworthy to have these skills. Therefore, to be successful in Computer Science for the next four years, sharpening one programming and soft skills by involving in most of the faculty and college events to ensure a successful university career.</p>
	<p>The significance of both technical and soft skills has been reflected upon through attending the talk and reading the articles, highlighting their importance in real-world scenarios. In software development teams, for instance, the creation of high-quality code is ensured by technical skills, but soft skills such as collaboration and communication are the ones that smoothen the execution of projects and align with user expectations. Without strong interpersonal skills, the full potential of technical solutions may fail to be achieved. This analysis has led to the re-evaluation of my own skill set. While the improvement of technical skills has always been prioritized, the cultivation of soft skills has now been recognized as equally important. To address this, opportunities to develop both areas will be actively sought, whether through internships, course assignments, or workshops. By doing so, a well-rounded computer science student capable of overcoming dynamic challenges can be developed.</p>
	<p>The industry talk highlighted the importance of balancing technical and soft skills for success in information technology (IT). Mr. Hakimi emphasized adaptability, teamwork, and resilience as essential traits for managing complex projects, while Mr. Nik introduced the IRPA method, offering practical strategies for career preparation. To succeed in computer science over the next four years, efforts will focus on mastering technical skills such as programming, system design, and project management, alongside improving communication and teamwork abilities. Priorities include securing internships, participating in project-based learning, and staying updated on industry trends. These strategies aim to bridge the gap between academic knowledge and professional expectations, ensuring readiness for a dynamic and successful IT career.</p>

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