CS3103 Assignment 4 Mini-Project Analysis Report

In this project, our goal is to investigate the varying degrees of popularity among different elements related to job postings within the Computer Science industry. To accomplish this, we have developed a web-crawling tool that enables us to analyse a substantial and representative sample of thousands of job postings.

We conducted an in-depth analysis of several key dimensions, including Job Types, Job Levels, Required Degrees, Job Modes, Job Roles, Communication Skills, Programming Languages, and Technology Frameworks. For each of these dimensions (e.g., Programming Languages), we further dissected them by scrutinising each specific type (e.g., C++), assessing the frequency with which particular keywords (e.g., "cpp," "c++") associated with that type were mentioned in job postings. This analysis provides us with valuable insights into the relative popularity of each type within its respective dimension.

Upon crawling and analysing ~2000 job postings, we present our findings below:

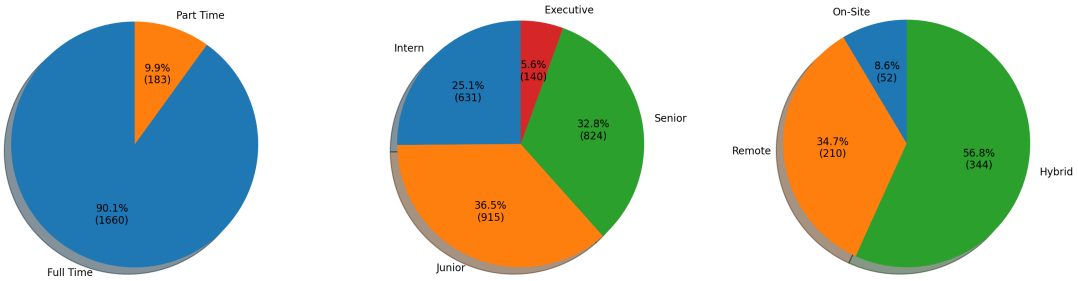

Figure 1 (left): Job Types Chart, Figure 2 (middle): Job Levels Chart, Figure 3 (right)

Finding 1 (refer to Figure 1): There is a high prevalence of Full Time positions (90.1%) compared to Part Time positions in the Computer Science industry. This is likely due to the nature of projects in this industry which often require significant investment of time and efforts such as to understand large codebases, learn the team coding standards and keep up with new technologies - making it considerably unfeasible for Part Time employees.

Finding 2 (refer to Figure 2): There is a distinct trend in the job market within the Computer Science industry, showcasing a predominant demand for both junior and senior developers. This dual emphasis on entry-level and experienced professionals suggests a balanced approach to talent acquisition, recognizing the need for fresh perspectives and seasoned expertise in the dynamic tech landscape. The slightly smaller percentage for intern positions indicates a focus on integrating emerging talent into the workforce, providing learning opportunities for those at the early stages of their careers. The smaller percentage for executive positions highlights a more conservative approach to leadership recruitment, potentially reflecting a preference for promoting internal talent or seeking leaders with hands-on technical experience.

Finding 3 (refer to Figure 3): There is a prevalent shift in the job market dynamics within the Computer Science industry, revealing that 56.8% of positions adopt a hybrid work model. This signifies a departure from traditional, office-centric work structures and aligns with the industry's adaptability to evolving work trends. The hybrid approach likely addresses the industry's recognition of the importance of flexibility, acknowledging that many tech professionals can effectively contribute to projects from remote locations.

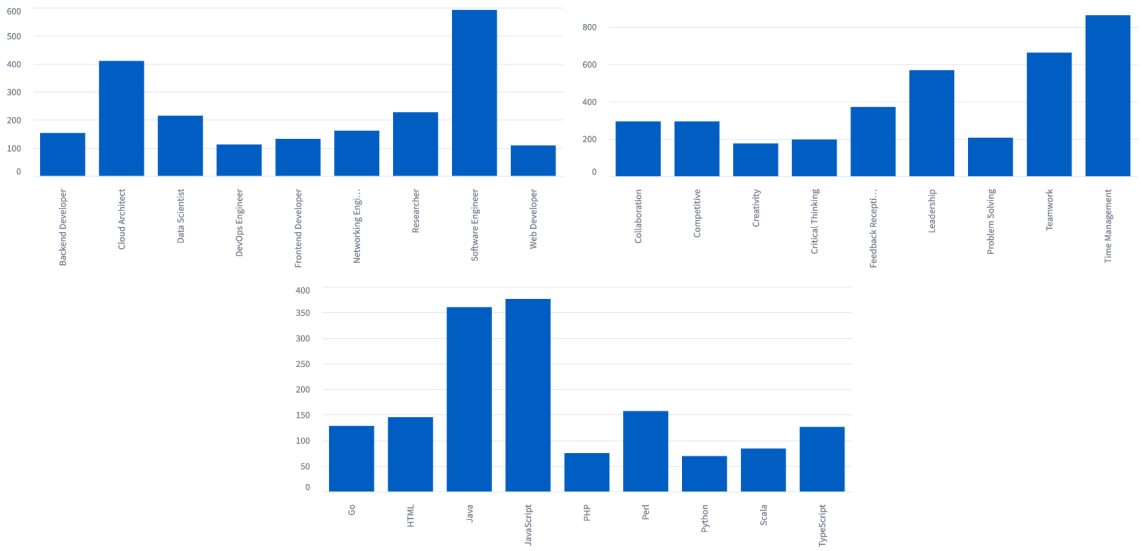

Figure 4 (top-left): Job Roles Chart, Figure 5 (top-right): Communication Skills Chart, Figure 6 (bottom): Programming Language Chart

Finding 4 (refer to Figure 4): While software engineering roles continue to be the most sought after in the industry, it's intriguing that cloud architects rank second, underscoring the substantial demand for these professionals in the current job market. This demand for cloud architects can be attributed to the rapid adoption of cloud computing, the inherent complexity of cloud environments, the increasing importance of security and compliance, the necessity for innovation and scalability, and the relative newness of the field. As organisations increasingly rely on cloud technology, cloud architects play a critical role in designing and managing cloud infrastructure, making them highly sought after in a landscape characterised by constant evolution and innovation.

Finding 5 (refer to Figure 5): The most prominent communication skills in the tech industry are time management and teamwork as the most prominent. Time management is imperative in the tech sector due to the constant pressure of tight deadlines and the rapid pace of innovation, demanding professionals to efficiently allocate their time and resources. Teamwork, on the other hand, is indispensable in an industry marked by intricate projects and interdisciplinary collaboration. It enables tech experts to work cohesively, pool their diverse skills and knowledge, and deliver innovative solutions, ultimately contributing to the overall success and adaptability of tech companies in this dynamic and competitive environment. Notably, we'd like to emphasise that, in comparison to other categories, soft skills keywords are significantly more prevalent. This underscores the continued high value that employers place on these skills, recognizing their equal importance alongside technical skills in the eyes of employers.

Finding 6 (refer to Figure 6): The most widely used programming languages are Java and JavaScript. Java holds its popularity firmly, particularly within large organisations and legacy codebases. Its enduring relevance can be attributed to its robustness, platform independence, and extensive adoption in enterprise-level applications. On the other hand, JavaScript stands out as a highly popular modern programming language. It boasts a rich ecosystem of frameworks and libraries for both backend and frontend development. JavaScript's versatility and adaptability have made it the go-to choice for web development and have contributed to its widespread use in contemporary software development.

Disclaimer:

- Due to the dependency of the analysis on the availability of crawlable sites, most of the data are taken from job postings in the United States