Specific Career

Software Architect – Machine Learning and Big Data

Big data technology infrastructure is complex with nuanced understanding of a wide variety of different technical frameworks in order to build effective software systems. Within an engineering team and the broader the product team, software architects are often considered to be among the most valuable contributors. Not only that a software architect is responsible for designing, developing and implementing software solutions to address complex business issues, they have to provide technical leadership within the various product and services teams as their design decisions often impact across the entire breath of a company's products. That is why a software architect role needs to coordinate between product teams, business teams, sales teams and C-level executives within the company. This means a software architect to be not only great with technology but also thrive in a highly collaborative workplace and actively engage horizontally and vertically within an organization necessitating excellent interpersonal skills.

The reason why I chose the specific career of software architect is because I already have extensive knowledge in big data analytics with my ongoing internship with University of Arizona. I also have aggrievedly pursued coding and computer science courses and relevant activities - I am a four time top award winner in Tech Challenge, the premier engineer design contest organized each year by San Jose based Tech Museum. I am also very involved in business side of technology – my years of involvement with FBLA and securing national and sate level awards attest to that. I believe by combining my knowledge in business with solid technical background will allow for me to be a successful software architect as I have found in my research. I believe that this career would be most fitting to my personality.

Description

Software Architects tend to oversee and work closely with other members of a development team such as programmers, designers, UX engineers, QA and sales teams. They are usually the leader of software development, both current and future, projects and often report directly to upper management.

A software architect is involved in all aspects of the project lifecycle, from ideation through requirements analysis, design and implementation. This is a hands-on position, requiring research, analysis, design, and delivery of solutions that meet business needs at massive scale. Sometime this may be an individual contributor position, but more often than not, there is expectation that the Software Architect will reach across the organization, providing leadership and influence in adoption of

technical solutions, strategies and design patterns across multiple teams and stakeholder. Although the specific duties and responsibilities will vary from project to project and company to company, there are, however, several common primary duties for nearly all Software Architects.

Develop Software Solutions

Software Architects must be able to evaluate and identify software solutions. Their jobs often begin by working with a client to discuss what they need their custom software to do or looking at poor-behaving software and finding ways to improve it. If creating consumer products, they may look at similar existing products and find ways to better them or revolutionize them. Software Architects must conduct research, gather information, interpret data, and then create a solution.

Lead Projects

Most Software Architects will be expected to act as the lead person on all software development projects. This may include creating a team of workers suitable for the scope of the project, assigning duties to the staff, creating a timeline for the project, and performing cost analysis and budgeting functions. The analysis, design, programming, testing and deployment are all managed by the Software Architect.

Document Projects

Documentation is a very important part of the Software Architect's job. Every aspect of a system or application must be thoroughly recorded. These documents will serve as references for new employees and for future maintenance on the system. Software Architects must be able to communicate well through writing and be able to create flowcharts and diagrams.

Mentor Subordinates

Coaching and mentoring one's development team is a common requirement of the Software Architect. They are expected share their skills and expertise with their staff as well as set a positive example for them. They need to be able to encourage their team members to think creatively as well as keep them motivated.

Skills & Education

A successful Software Architect must be technically inclined, a great problem-solver, and possess excellent interpersonal relationship skills. They are entrepreneurial,

wonderful leaders and are extremely reliable. They should also work well under pressure and tight deadlines. In addition to these traits, employers look for applicants with the following skills.

Core skills

The core skills associated with a software architect role is broad and extensive knowledge of the software development process and its technologies, proficiency with multiple programming languages and design patterns, knowledge of architectural styles and design patterns, solid understanding of various coding methods and computer languages, experience with data modeling, database design, software development lifecycle (SDLC) and service oriented architecture (SOA). Since this role focuses on Big data and machine learning, proficiency about Cloud technologies such as private/hybrid/public, Big Data (Spark, Cloudera, Hortonworks) ecosystems, experience in designing big data lake/warehouse for data integration from enterprise wide applications/systems are essential. Machine Learning Libraries and platforms such as Apache Spark ML/MLib, TensorFlow, R Server, Zeppelin, Jupyter, etc. and experience in big data stores (in order of importance): Elastic, Cassandra, Hbase, Hive, HDFS, etc. are sought after.

Advanced skills

While most employers so not require the following skills, but there are additional skills that are highly sough after. This includes experience with enterprise service bus (ESB) platforms such as, MuleSoft or BizTalk and with content management systems. Experience with various ingestion patterns for large data sets Experience with Open Source and NoSQL technologies (e.g. MongoDB, Redis) at an Enterprise level and Lambda architecture for ingestion including real-time streaming technologies (Kafka, Storm, Spark Streaming) are considered desirable.

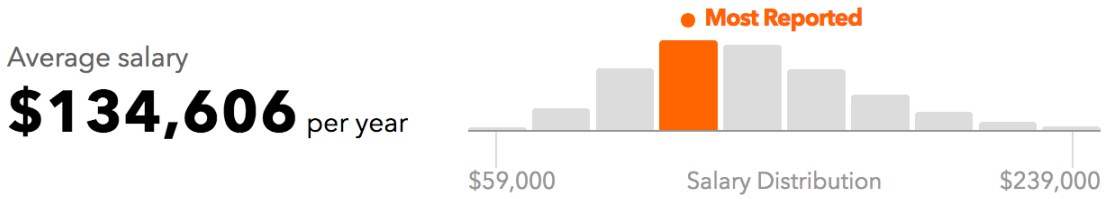
Education

Master's degree in Computer Science or Computer Engineering.

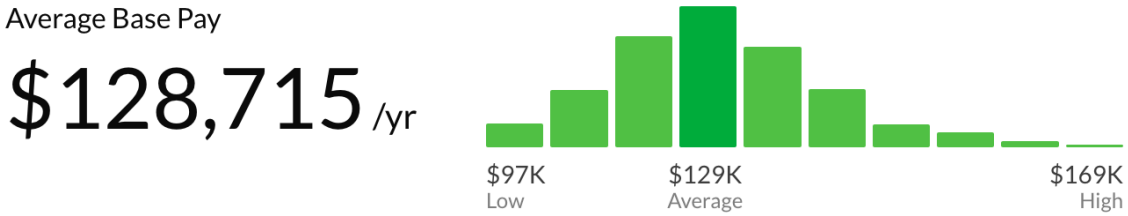
Money/Salary

The median salary for Software Architects is well documented.

As per indeed.com, the median annual Software Architect salary is $119,922, as of February 12, 2018, with a range usually between $59,000 to $239,000, however this can vary widely depending on a variety of factors. This salary is estimated from 4,822 employees, users, and past and present job advertisements on Indeed in the past 24 months. These numbers are accurate as of February 10, 2018.



As per glassdoor.com, the national average salary for a Software Architect is $128,715 in United States. These salary estimates are based on 3,995 salaries submitted anonymously to Glassdoor by Software Architect employees.



https://www.indeed.com/salaries/Senior-Software-Architect-Salaries

https://www.glassdoor.com/Salaries/us-software-architect-salary-SRCH_IL.0,2_IN1_KO3,21.htm

Future Job Outlook & Advancement

According to the Bureau of Labor Statistics, Software Developers, including Software Architects, are expected to see an above average growth rate of 17 percent through 2024. This will add an estimated 186,600 jobs to this sector during this timeframe.

Once many software architects establish their career, there are a number of different career paths for advancement. Since these roles are highly technical and often deal with cutting edge technologies, many move on to become chief technology officer and other senior management roles that fall under various different titles depending on the company and the industry such as chief architect, VP Engineering, chief operating officer and eventually chief operating officer and Founder of their own companies.