Gabriela Masak

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Careers and Career Goals

Data is everywhere. We collect data with our eyes and ears, with sensors and chips, and with algorithms and programs. This data can tell a story, lead to a decision, or make a prediction. There are several roles involved with data as it is collected and transformed. These roles are data, analyst, machine learning engineer, and data engineer.

A data analyst’s role can be summarized as collecting, analyzing, and interpreting datasets to improve business decisions and outcomes. A more specific view of their tasks includes data collection, cleaning, preparation, processing, analysis, reporting, visualization, and predictive analysis. Data analysts use statistical methods and data visualization tools to identify trends and compile insights, create reports and visuals for stakeholders, and collaborate with team members to make data-driven decisions (ProjectPro, 2024). Advances in computing and its applications in the data science realm make continuous learning and staying updated with new tools and techniques crucial aspects of the data analyst role, similar to a machine learning engineer.

Machine learning has become a buzz word in recent years. It is no surprise that there is growing demand for machine learning engineers. While their role is similar to that of a data analyst in terms of using data for analytical purposes, a machine learning engineer primarily focuses on developing, designing, and deploying artificially intelligent algorithms and models that can automate its analysis (ProjectPro, 2024). Like data analysts, machine learning engineers should have a good understanding of statistics, but also need to command a good working knowledge of software engineering in order to build and integrate the appropriate models. The computational assistance allows for real time and Big Data computations, sometimes with cloud computing platforms, organized and managed by data engineers.

A data engineer focuses on data in a technically broad sense, mainly data infrastructure. Whereas data scientists and data analysts focus on the applications of that data through various techniques and calculations, data engineers focus on the storage and housing of data. Data engineers support the data analytics life cycles by building and maintaining data pipelines, integrating data from various sources, and ensuring that data is accurate, consistent, and accessible. In short, their role ensures that data and computational abilities are available for the analysis done by data analysts and machine learning engineers. They manage data storage systems, such as databases, data lakes, and data warehouses, and work closely with other data team members to ensure the infrastructure meets business needs. Additionally, data engineers may be responsible for implementing data security and privacy measures, monitoring system performance, and troubleshooting issues as they arise (ProjectPro, 2024).

These roles can have various names as defined by the Bureau of Labor Statistics, such as Data Analytics Specialist, Computer and Information Research Scientists, and Database administrators and architects respectively. All require varying levels of education. A Data Analytics Specialist and Database administrators require a Bachelor’s in Statistics, Computer Science, or Computer Engineering, whereas the Bureau of Labor Statistics recommends a Master’s degree for those in Computer and Information Research Scientist roles (U.S. Bureau Of Labor Statistics, 2023). They have also published data that all three roles are exhibiting quite remarkable levels of growth. For Data Analytics Specialist, growth is forecasted to be 36% annually, with annual growth at 9% for Database Administrators, whereas growth is predicted to be 23% for those in Computer and Information Research Scientist roles (U.S. Bureau Of Labor Statistics, 2023). This is certainly promising as I look to complete my Master’s degree in Data Analytics.

While I possess several degrees, a Bachelor's in Petroleum Engineering, a Bachelor’s in Spanish, and a Bachelor’s in Computer Science, I do not yet have the Master’s degree required to become a Machine Learning engineer. I am ambitiously hoping to achieve this by completing the Master’s of Data Analytics at Western Governors University and applying that knowledge to a future career in Data Analytics. Of the three specializations, I chose the Data Science path as I would like to develop skills surrounding Big Data and Machine Learning. I can envision myself working on projects that overlap my experience in the energy industry, analyzing subsurface or consumption habits data and forecasting production and demand. In the energy industry, data is expensive, but necessary. Data can be previously recovered or arrive in real time. Development of automated algorithms that can efficiently and accurately make these predictions and forecasts is certainly a demand that needs to be filled.

I think that a role as a machine learning engineer also aligns with the career strengths identified by CliftonStrengths. The assessment highlighted my restorative, achiever, learner, arranger, and analytical strengths. These strengths are categorized by executing skills and strategic thinking, which are necessary as a machine learning engineer. The restorative strength highlights my problem-solving abilities, which is essential for finding algorithms that effectively deliver accurate predictions as a machine learning engineer. The achiever strength focuses more on my drive and habitual focus on growth and success, which is complimentary for a novel and growth field like machine learning and artificial intelligence. As the field grows, I will too. This is also highlighted by my strength as a learner, as I will learn and develop my own skills as new techniques and strategies are developed in machine learning. My strength as an arranger, the ability to see patterns and themes within complex problems, will allow me to create algorithms to tackle complex sets of data. Lastly, my analytical strength will serve as an objective orientation as I navigate formulating patterns and connections in datasets.

I believe that these skills, strengths, and educational experiences will lead me to a successful career in the data analytics realm. Starting as an intern while I finish my degree, I will gain hands-on experience and practical knowledge in real-world projects. This will allow me to apply theoretical concepts and develop my technical skills further. After graduation, I aim to secure a full-time position as a junior machine learning engineer, where I can continue to learn and grow under the mentorship of experienced professionals. Over time, I plan to specialize in advanced machine learning techniques and contribute to innovative projects that solve complex problems, possibly with reservoir simulation or production forecasting. My ultimate goal is to become a lead machine learning engineer, driving impactful data-driven solutions and making significant contributions to the field.

 The field of data analytics encompasses a variety of roles, each with its own unique responsibilities and contributions to the data lifecycle. Data analysts, machine learning engineers, and data engineers all play crucial parts in transforming raw data into actionable insights that drive business decisions and innovations. As the demand for data-driven solutions continues to grow, so does the need for skilled professionals in these roles. With promising growth rates and the continuous evolution of technology, pursuing a career in data analytics offers a dynamic and rewarding path. As I work towards completing my Master’s degree in Data Analytics, I am excited about the opportunities ahead and the potential to make significant contributions to this ever-expanding field.

Sources Cited

1. *Data Science compared with different analytics disciplines*. ProjectPro. (2024, March 8). <https://www.projectpro.io/article/data-science-compared-with-different-analytics-disciplines/175>
2. U.S. Bureau Of Labor Statistics. (2023, September 6). *Occupational Outlook Handbook: U.S. Bureau of Labor Statistics*. Bls.gov; Office of Occupational Statistics and Employment Projections. <https://www.bls.gov/ooh/>