

Acadia Technologies

Email: info@acadiatechnologies.com

Website: Acadiatechnologies.com

INTERNSHIP REPORT IN BUSINESS ANALYTICS



Venu Dodda
Data Engineer Intern





Acadia Technologies Inc.
2300 Satellite Blvd.
Suite #200, Duluth, GA 30097
Phone: 678-688-4891 Fax: 678-379-2357
info@acadiatechnologies.com

CONTENTS

Acknowledgment	3
1. Introduction to Organization	4
2. Executive Summary	5
3. Skills	5
4. Roles & Responsibilities	5
5. Challenges	6
5.1. What was the problem that you were trying to solve during your internship?	7
5.2. What is the business value in solving that problem?	7
5.3. What approach did you decide to take to tackle the issue?	8
5.4. How did you address any of the challenges in Q5?	9
5.5. What was the project outcome? How the project can be future improved in the future?	9
6. Contributions	10
6.1. If your work was part of a team effort, what was your individual contribution to the project?	10
7. Conclusion	11



Acadia Technologies Inc.
2300 Satellite Blvd.
Suite #200, Duluth, GA 30097
Phone: 678-688-4891 Fax: 678-379-2357
info@acadiatechnologies.com

ACKNOWLEDGEMENT

I am thrilled to hear that pursuing an internship at **Acadia Technologies** turned out to be such a great decision for me. Working with the company's core development team over the past 4 months has given me valuable experience. It is great to hear that Acadia Technologies was able to provide me with exposure to Data engineering skills. This kind of hands-on experience can be incredibly valuable, and I am sure it will help my career goals.

I'd like to extend my thanks to **Acadia Technologies** for providing such a positive and rewarding internship experience. It's clear that the company values its interns and is committed to helping them grow and develop professionally.

I'd also like to acknowledge the important role that **Kent State University** played in helping me secure this opportunity. The faculty and staff who supported me throughout the internship process deserve recognition for their dedication to helping students succeed.

I want to express my gratitude to my internship supervisor Professor **Dr. Alan Brandyberry** for his mentorship and support. Having a good supervisor can make all the difference in an internship experience.

This report has been written by me and has not received any previous academic credit at this or any other institution.

I would like to thank **Mr. Madhu Sunkara** for the support and guidance he provided as my work supervisor at Acadia Technologies.

Name

Venu Dodda



Acadia Technologies Inc.
2300 Satellite Blvd.
Suite #200, Duluth, GA 30097
Phone: 678-688-4891 Fax: 678-379-2357
info@acadiatechnologies.com

1. Introduction to Organization

Acadia Technologies is a leading data engineering company specializing in software development for the healthcare industry. The company founded in 2010 and headquartered in Duluth, Georgia, United States, with operations spanning across global.

The company's mission is to revolutionize the healthcare industry by providing cutting-edge software solutions that improve patient outcomes and reduce healthcare costs. Their core values include innovation, collaboration, and a commitment to excellence.

As a data engineering company, Acadia Technologies is focused on leveraging data analytics and machine learning to extract insights from large, complex data sets. Their team of expert data engineers and scientists work closely with clients to develop custom solutions that are tailored to their specific needs.

In addition to their data engineering services, Acadia Technologies also provides a range of software development services for the healthcare industry. Their solutions include electronic medical record (EMR) systems, telemedicine platforms, and mobile health applications, among others. These solutions are designed to improve patient care and streamline healthcare processes, making it easier for providers to deliver high-quality care.

Acadia Technologies's Healthcare management system software is a comprehensive solution that helps healthcare providers in various disciplines, including contactless visitor management, OPD/IPD management, billing management, appointment management, insurance and credit tracking, central sterile supply department tracking, MIS reports, e-prescriptions, nursing care, and ward management. This software solution is designed to help healthcare providers manage their day-to-day operations more efficiently, providing better care for patients while saving time and reducing costs.

In terms of corporate social responsibility, Acadia Technologies is committed to making a positive impact on society. They partner with non-profit organizations and community groups to support healthcare initiatives and provide resources to underserved communities.

Overall, Acadia Technologies is a dynamic data engineering company that is making a significant impact on the healthcare industry. Their innovative software solutions are improving patient outcomes, reducing healthcare costs, and advancing the field of data analytics.



Acadia Technologies Inc.
2300 Satellite Blvd.
Suite #200, Duluth, GA 30097
Phone: 678-688-4891 Fax: 678-379-2357
info@acadiatechnologies.com

2. Executive Summary

As a data engineer intern, I worked closely with the data engineering team at Acadia Technologies to gain hands-on experience in data processing, modeling, and analysis. During the internship, I assisted in the development of custom software solutions to extract insights from large, complex data sets, leveraging programming languages such as Python and SQL. I was actively involved in healthcare management projects, such as designing and implementing data pipelines, data cleansing, and data transformation workflows. Additionally, I worked with senior data engineers to identify and implement improvements to existing data processing systems, ensuring optimal performance and scalability. Throughout the internship, I demonstrated a strong understanding of data engineering concepts and techniques, as well as a keen attention to detail and problem-solving skills. I was able to successfully complete all assigned tasks on time and demonstrated excellent teamwork and communication skills while working with colleagues and stakeholders.

Overall, my internship experience at Acadia Technologies provided valuable insights into the world of data engineering and software development.

3. Skills

- Azure data services such as Azure Data Factory, Azure Databricks, and Azure SQL Database.
- Design, implement, and manage data pipelines and workflows.
- Version control systems such as Git.
- Programming Language Python.
- Microsoft SQL and Power BI.

4. Roles & Responsibilities

Details of the work carried out, and challenges faced.

I was involved in the following.

Data pipeline development: I was involved in designing and implementing data pipelines that enable the seamless transfer of data between various systems, applications, and databases. For this, we used Azure Data Factory, Azure blob storage, etc.

Data modeling: This involves designing data models that accurately represent the organization's data and facilitate efficient data processing and analysis. This involves using tools such as Azure SQL Data Warehouse, Azure Analysis Services, and Azure Cosmos DB.



Acadia Technologies Inc.
2300 Satellite Blvd.
Suite #200, Duluth, GA 30097
Phone: 678-688-4891 Fax: 678-379-2357
info@acadiatechnologies.com

Database management: This involves managing and optimizing databases to ensure optimal performance and scalability. This involves tasks such as database backup and recovery, performance tuning, and capacity planning.

Data integration: This involves integrating data from various sources to create a unified view of the organization's data. This involves using tools such as Azure Data Lake, Azure Data Catalog, and Azure Data Share.

Data analysis and reporting: This involves working closely with data analysts to develop reports and dashboards that provide insights into the organization's data. This involves using tools such as Power BI, Excel, and SQL Server Reporting Services.

Security and compliance: This involves ensuring that the organization's data is secure and compliant with relevant regulations such as HIPAA, GDPR, and PCI-DSS. This involves implementing encryption, access controls, and monitoring tools to ensure data privacy and security.

Cloud infrastructure management: This involves managing and optimizing the organization's cloud infrastructure to ensure optimal performance, scalability, and cost-effectiveness. This involves tasks such as resource allocation, monitoring, and automation using tools such as Azure Monitor, Azure Resource Manager, and Azure Automation.

5. Challenges

As an Azure data engineer intern, I faced a few challenges during my internship, including:

Learning Azure Services: As an intern, learning the various Azure services can be a daunting task. There are many services, and each service has its own purpose, capabilities, and limitations. It was challenging to understand and work with these services effectively.

Data Integration: Integrating data from different sources was another challenge I faced. In healthcare, data comes from various sources, including electronic health records (EHR), medical devices, and administrative systems. Transforming and integrating this data was a time-consuming task that required careful attention to detail.

Data Security: Healthcare data is sensitive and needs to be protected from unauthorized access. As an intern, I had to ensure that the data I worked with was secured and protected by following industry-standard security protocols.



Acadia Technologies Inc.
2300 Satellite Blvd.
Suite #200, Duluth, GA 30097
Phone: 678-688-4891 Fax: 678-379-2357
info@acadiatechnologies.com

Performance Optimization: Azure provides various optimization techniques for improving data processing and analysis performance. However, optimizing data processing workflows can be challenging when working with large datasets. I had to learn how to optimize my data processing workflows to reduce processing time and increase efficiency.

Communication: As an intern, I worked with various teams and stakeholders, including data analysts, developers, and business users. Effective communication skills were essential for ensuring that everyone was on the same page and that tasks were completed on time and to a high standard.

Overcoming these challenges helped me develop valuable skills in data engineering, cloud computing, and problem-solving, which I can apply in a range of industries and settings.

5.1. What was the problem that you were trying to solve during your internship?

During my Azure data engineer internship, I was tasked with solving a problem related to data integration for a healthcare client. The client had a large amount of data stored in various data sources, including electronic health records (EHR) and medical devices. However, this data was not integrated, and there was no way to analyze it efficiently and effectively.

My task was to design and implement a data integration solution using Azure services that could efficiently transform and integrate the data from different sources into a single format. The solution needed to be scalable, secure, and compliant with industry standards and regulations.

To solve this problem, I designed and implemented an Azure data pipeline that could extract, transform, and load (ETL) the data from various sources into a centralized data lake. I used Azure Data Factory, Azure Databricks, and Azure Data Lake Storage to build the pipeline. The pipeline was designed to handle large volumes of data, automate the ETL process, and ensure data security and compliance.

The solution was successful in integrating the client's data and providing a centralized and secure data lake that could be used for analysis and reporting. It enabled the client to gain insights into their data that were previously unavailable, leading to improved patient care and operational efficiency.

5.2. What is the business value in solving that problem?

The business value of solving the data integration problem for the healthcare client during my Azure data engineer internship is significant. By integrating data from different sources into a single format, the client was able to gain a holistic view of patient care, improve patient outcomes, and reduce healthcare costs.



Acadia Technologies Inc.
2300 Satellite Blvd.
Suite #200, Duluth, GA 30097
Phone: 678-688-4891 Fax: 678-379-2357
info@acadiatechnologies.com

Firstly, by having a centralized and complete view of patient data, healthcare providers can make more informed decisions about patient care, leading to improved patient outcomes. For example, providers can identify potential health issues early on and provide targeted interventions, reducing hospitalizations and readmissions.

Secondly, data integration can also help reduce healthcare costs. By identifying areas of inefficiency and waste, providers can optimize operations and reduce unnecessary procedures and treatments. This can lead to cost savings for both the provider and the patient.

Finally, data integration can also provide valuable insights for healthcare research and development. By analyzing large volumes of integrated data, researchers can identify new trends, patterns, and potential treatment options. This can lead to new discoveries and advancements in healthcare.

Overall, the business value of solving the data integration problem for the healthcare client is significant and can lead to improved patient care, cost savings, and valuable insights for healthcare research and development.

5.3. What approach did you/the company decided to take to tackle the issue?

During my Azure data engineer internship, the approach that we took to tackle the data integration issue for the healthcare client was to use Azure Data Factory and Azure SQL Database.

Firstly, we used Azure Data Factory to orchestrate and automate the data movement from various sources into a central data repository. This included extracting data from different systems, transforming the data into a standardized format, and loading it into the Azure SQL Database.

Secondly, we used Azure SQL Database to store and manage the integrated data. The database was designed to accommodate the complex relationships between different data sources, allowing for seamless querying and analysis.

Additionally, we implemented data quality checks and monitoring to ensure the accuracy and completeness of the integrated data. This involved setting up alerts and notifications for any issues or anomalies that may arise during the data integration process.

Overall, the approach we took to tackle the data integration issue for the healthcare client was a combination of using Azure Data Factory and Azure SQL Database and implementing data quality checks and monitoring to ensure the accuracy and completeness of the integrated data.

5.4. How did you address any of the challenges in Q5?

During my Azure data engineer internship, we faced several challenges in the data integration process for a healthcare client. One of the challenges was dealing with data from legacy systems that had different data formats and structures.

To address this challenge, we used Azure Data Factory to transform the data into a standardized format that could be easily integrated into the central data repository. We also implemented data quality checks and monitoring to ensure the accuracy and completeness of the integrated data, which helped us identify and address any issues or anomalies that may arise during the data integration process.

Another challenge we faced was ensuring the security and privacy of integrated data, especially considering the sensitive nature of healthcare data. To address this challenge, we implemented strict access controls and encryption protocols to safeguard the data from unauthorized access or data breaches.

Overall, we addressed the challenges in the data integration process by using Azure Data Factory to transform the data into a standardized format, implementing data quality checks and monitoring to ensure data accuracy and completeness, and implementing strict security and privacy measures to safeguard the integrated data.

5.5 What was the project outcome? How the project can be future improved in the future?

The project outcome was successful data integration of the healthcare client's legacy data into a centralized data repository using Azure Data Factory. The integrated data was accurate, complete, and secure, which allowed the client to gain valuable insights into their healthcare operations and make data-driven decisions to improve patient care and outcomes.

To further improve the project in the future, we could implement more advanced analytics and machine learning models to gain deeper insights into the data and identify patterns or trends that may not be immediately apparent. Additionally, we could explore more advanced data visualization techniques to make the insights more accessible and actionable for the client. Finally, we could continue to monitor and improve data quality and security measures to ensure the integrated data remains accurate, complete, and secure over time.

6. Contributions

As an Azure data engineer intern, my contributions to the project included:

- Assisting in the design and development of the data integration workflows using Azure Data Factory
- Developing and executing data quality checks and data profiling activities to ensure the integrated data was accurate and complete.
- Collaborating with the data analyst and client stakeholders to understand their requirements and ensure the integrated data meets their needs.
- Troubleshooting and resolving data integration issues as they arose.
- Documenting the data integration workflows and data sources for future reference and maintenance.

Overall, my contributions helped ensure the successful integration of the healthcare client's legacy data into a centralized data repository, which allowed the client to gain valuable insights into their healthcare operations and make data-driven decisions to improve patient care and outcomes.

6.1. If your work was part of a team effort, what was your individual contribution to the project?

As an Azure data engineer intern working as part of a team effort, my individual contributions to the project included:

- Assisting in the design and development of the data integration workflows using Azure Data Factory
- Developing and executing data quality checks and data profiling activities to ensure the integrated data was accurate and complete.
- Collaborating with the data analyst and client stakeholders to understand their requirements and ensure the integrated data meets their needs.
- Troubleshooting and resolving data integration issues as they arose
- Documenting the data integration workflows and data sources for future reference and maintenance
- Sharing my knowledge of Azure Data Factory and other Azure data engineering tools with the team and helping to train new team members.
- Participating in team meetings and contributing to discussions on how to improve the project's data integration processes and efficiency.

Through my individual contributions, I was able to help the team achieve its goals and deliver a high-quality integrated data solution to the healthcare client.



Acadia Technologies Inc.
2300 Satellite Blvd.
Suite #200, Duluth, GA 30097
Phone: 678-688-4891 Fax: 678-379-2357
info@acadiatechnologies.com

7. Conclusion

Overall, my internship as an Azure data engineer for a healthcare data integration project was a rewarding and educational experience. I was tasked with integrating data from various healthcare sources into a centralized data warehouse to help the client gain insights and make informed decisions to improve patient care and outcomes.

To tackle this issue, I worked collaboratively with a team and used Azure data engineering tools such as Azure Data Factory, Azure Databricks, and Azure SQL Database. While working on the project, I encountered challenges such as data quality issues and time constraints, but I was able to overcome them through effective communication, problem-solving, and collaboration with the team.

As an individual contributor to the project, I played an active role in producing data integration pipelines using Azure Data Factory, designing ETL processes, and performing data validation checks. Additionally, I contributed to the development of the data model and collaborated with the team on the implementation of the data transformation processes.

The outcome of the project was a successful integration of healthcare data from multiple sources into a centralized data warehouse, which enabled the client to gain valuable insights into their patient care processes. Moving forward, there is still room for improvement in the project, such as incorporating more automated testing and data validation processes to further enhance data quality and efficiency.

Overall, my Azure data engineer internship provided me with valuable skills and experience that I can apply in my future career. Through the project, I gained a deeper understanding of Azure data engineering tools and learned how to work collaboratively with a team to deliver a high-quality solution to a client.



Acadia Technologies Inc.
2300 Satellite Blvd.
Suite #200, Duluth, GA 30097
Phone: 678-688-4891 Fax: 678-379-2357
info@acadiatechnologies.com

THANK YOU !!!