

MERIT Internship Report

School of science, department of physics, Ideguchi lab

doctoral course/MERIT 11th

Genki Ishigane

1. Overview

Host Company: Hitachi, Ltd.

Theme: Research on Spectral Analysis AI Technology for Pharmaceutical and Bio-Analysis Systems

Schedule: 11/18 - 2/14 (three days a week, with approximately one-third of the time spent on-site and the remainder via remote work)

2. Background of Internship Participation

At university, I have been conducting research on the development of high-resolution infrared microscopes, focusing on the analysis of infrared spectra and hyperspectral data. The theme of this internship, which involves research on spectral analysis AI technology for pharmaceutical and bio-analysis systems, closely aligns with my current research. This motivated me to apply for the internship. Additionally, I saw this as an excellent opportunity to reconsider my future career path: whether to continue as a researcher in academia or pursue a position in industry. Since the specific details of the research are confidential, this report will focus on the experiences and learnings gained during the internship.

3. Research Experience and Insights

Through this internship, I realized that researches in academia and industry share similarities but also exhibit notable differences. Regarding the similarities, logical thinking and a persistent approach to problem-solving are essential in both settings. The process of forming hypotheses, acquiring and analyzing data, and drawing conclusions remained unchanged. Furthermore, the overall atmosphere within the research institute and the environment during regular progress meetings were similar to what I have experienced on campus: vibrant yet calm, providing an ideal setting for focused work.

On the other hand, the division of roles within research activities stood out as a key difference in the corporate environment. In my research field at university, we typically

manage the entire research process as individuals or within small teams, from planning and equipment construction to data acquisition and analysis. However, in this internship, each stage of the research was assigned to specialists who leveraged their expertise to maximize efficiency. While neither approach is inherently better than the other, understanding this distinction proved insightful to us when considering future career options.

4. Impact on Future Career

This internship provided me with a deeper understanding of the similarities and differences between academic and corporate research environments. I have been uncertain about whether to continue as a researcher in academia or transition to industry. This experience significantly contributed to my decision-making process. I found the potential for my research to be applied practically and contribute to society particularly motivating in the corporate setting. Conversely, the freedom to pursue fundamental research based on personal interests in academia also remains appealing. While I had often heard these perspectives in career seminars, experiencing both gave me a clear understanding of their implications. Indeed, this internship reinforced the proverb that "seeing is believing." Moving forward, I plan to continue my research with renewed appreciation for my current academic environment while carefully considering the next steps in my career.

5. Conclusion

Over the course of three months, I gained valuable insights into the commonalities and differences between academic and corporate research environments and assessed my aptitude for corporate research. I am deeply grateful to everyone at Hitachi, Ltd. who supported my internship experience. I will use these learnings to further advance my research activities in the future.