

## ESERA Travel Award Visit Report

The Visitor: Candan Kafalı, PhD Student

The Visitor's University: Çanakkale Onsekiz Mart University

The Host Researcher: Associate Professor, Xiaoming Zhai

The Host University: University of Georgia, Department of Mathematics, Science, and Social Studies Education, AI4STEM Education Center

The Visit Dates: 19<sup>th</sup> to 23<sup>th</sup> of January 2026

To the ESERA President's Travel Award Committee, Board of Directors, and Early Career Researcher Travel Award Committee,

It is a great pleasure to report on my experiences with the ESERA Travel Award 2025. As a science teacher and a doctoral candidate in science education, I found this program to be an exceptionally rewarding opportunity, offering profound contributions to my academic development and my pedagogical expertise in science instruction.

My visit to the AI4STEM Education Center within the Mary Frances Early College of Education at the University of Georgia was an inspiring experience that significantly



contributed to my ongoing doctoral dissertation and future research endeavors. As an interdisciplinary hub, the AI4STEM Education Center integrates expertise from diverse fields-including

computer science, artificial intelligence, engineering, STEM education, and data science with the overarching goal of embedding AI into STEM pedagogy.

The primary objective of my visit was to conduct an on-site examination of AI applications in science education, specifically seeking expert consultation on the automated scoring of scientific explanations, which constitutes the focal point of my thesis. In this regard, the

meetings held with the Center Director, Assoc. Prof. Xiaoming Zhai, were exceptionally productive. We engaged in comprehensive technical discussions regarding the validity and reliability of machine learning-based assessment systems.

Drawing from his extensive project experience, Assoc. Prof. Zhai provided invaluable methodological insights into adapting Natural Language Processing (NLP) models-typically used in structured text analysis to the unique linguistic framework of the Turkish language. Throughout the week, he addressed my inquiries on enhancing scoring accuracy in automated systems and provided strategic guidance on critical technical nuances. The most significant outcome of this visit has been the refinement and stabilization of my dissertation's technical methodology.

Furthermore, I had the opportunity to engage with the center's researchers and graduate students, observing a dynamic and highly collaborative research culture. Under the mentorship of Prof. Dr. Nejla Yürük, I gained in-depth knowledge of the center's project portfolio. I



I examined strategies developed for the integration of AI tools into classroom environments. By reviewing the initiatives within the GENIUS project, which focuses on the role of AI in STEM education, I witnessed tangible examples of the future of science education. I observed innovative methods regarding how AI tools can scaffold students' scientific reasoning skills and how educators can position these tools as instructional assistants. The professional discipline of the AI4STEM team and the ability of experts from disparate fields (e.g., engineers and educators) to establish a common functional language were profoundly inspiring for my professional development.

In conclusion, my visit to the University of Georgia's AI4STEM Education Center was far more than a mere observational study; it served as a pivotal turning point that grounded my doctoral research on a robust scientific foundation. I am confident that the academic networks

established during this visit will serve as a cornerstone for future collaborative publications and joint research projects.

I would like to express my sincere gratitude to the ESERA Travel Award Committee for providing me with this opportunity, which has allowed me to strengthen the scientific foundation



of my doctoral dissertation and establish an academic network for future collaborations. Furthermore, I would like to extend my deepest thanks to Assoc. Prof. Xiaoming Zhai and Prof. Dr. Nejla Yürük for accepting my visit despite their demanding schedules and for providing me with invaluable academic support and guidance throughout this process.

Best regards,  
Candan Kafalı