# PhD Seminar 1

**Monday February 5, 2024 at 2:30PM, online via Zoom (Remote)**

## Marzieh Soltani

*Building Decision Support Systems for
Avian Influenza Monitoring and Prediction*

**Advisor:** Dr. Rozita Dara
**Co-Advisor:** Dr. Shayan Sharif (Pathobiology)
**Advisory:** Dr. Neil Bruce
**Advisory:** Dr. Zvonimir Poljak (Population Medicine)

## Abstract:

Avian Influenza Virus (AIV) represents a significant threat to both the global poultry industry and public health. The emergence of highly pathogenic avian influenza H5 subtype viruses has intensified the impact on avian and mammalian species, increasing the potential for influenza pandemics. Over recent decades, AIV has caused numerous outbreaks worldwide, including incidents in Canada and the US. State-of-the-art studies have examined this issue through various modeling perspectives, encompassing transmission, prediction, surveillance, and early detection models aimed at mitigating the virus's introduction and spread. However, integrating multiple data sources and inference engines to create comprehensive decision-support systems has not been fully explored in previous studies.

Motivated by the need for a comprehensive approach, this research proposes a decision support system designed to help authorities in the prevention and spread of AIVs with the aim of limiting the level of transmission. The focus of this study lies in utilizing multiple data sources, such as social media, Google Trends, and spatiotemporal data, along with understanding users' needs, e.g., emergency responders' need to refine the system's interface and functionality. This system employs statistical, mathematical, and deep learning methodologies to conduct a thorough analysis, facilitating prompt and accurate decision-making during emergencies.