



UAA College of Engineering
UNIVERSITY of ALASKA ANCHORAGE



UAA Professional Development Seminar Series

Automating Aerial Arctic Seal Surveys with Machine Learning

**Presented by Yuval Boss, Engineer, University of
Washington**

Large scale multispectral aerial surveys of arctic sea ice to estimate the abundance and distribution of ice seals and polar bears result in the collection of millions of infrared, color, and ultraviolet images. Manual processing of this imagery to gather data such as annotations required in population assessment is arduous and impractical at this scale. Rapid improvements in computer vision and machine learning have improved automated localization of animals in imagery and allowed for species classification, conserving resources and reducing processing time, and reducing the number of false-positive detections while maintaining a high level of accuracy. Conducting these surveys has required a tremendous multidisciplinary effort, from building the software and hardware sensing systems, to collecting the data, and finally to producing data products for statisticians, biologists, and the further development of machine learning models. This talk will give an overview of how we utilize machine learning in our surveys, discuss some of the unique challenges that come with developing and deploying these technologies in remote sensing research applications, and share how we've addressed these challenges.

Yuval Boss is a machine learning engineer at the University of Washington's Cooperative Institute for Climate, Ocean, & Ecosystem Studies (CICOES) where he collaborates with the National Oceanic and Atmospheric Administration's Polar Ecosystems Program developing machine learning models and multispectral image processing pipelines for aerial population assessment surveys of ice-associated seals and polar bears. Previously, Yuval worked in the MacCoss Lab at the University of Washington on [Skyline](#), an open-source application for building targeted workflows and analyzing the results of mass spectrometer data. Yuval received his bachelor's in computer science from the University of Washington where he began his research on ice seal and polar bear detection advised by Dr. Joseph Redmon.

Friday, September 17, 2021

11:45 am-12:45 pm

Online Via [YouTube Live](#)