Atlantes: A System of GPS Transformers for Global-scale Real-time Maritime Intelligence

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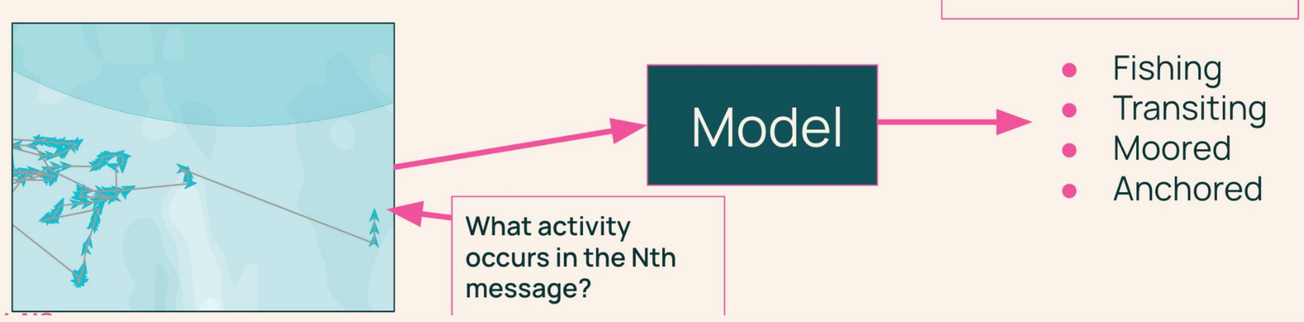
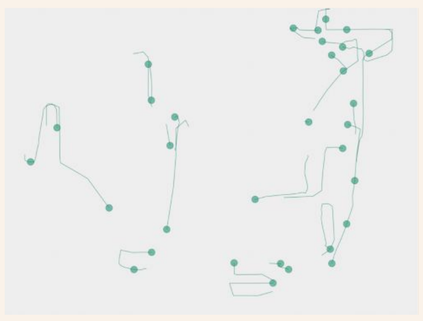
GPS Activity Classification

Sequence of N messages where each message contains:
- (Latitude, Longitude)
- SOG (Speed over Ground)
- COG (Course over Ground)
- Timestamp



Examples of GPS trajectories with different activities

Fishing

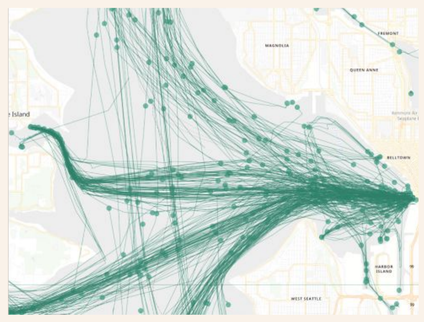


Off the west coast fo Africa

Anchored

South Pacific, North of Australia

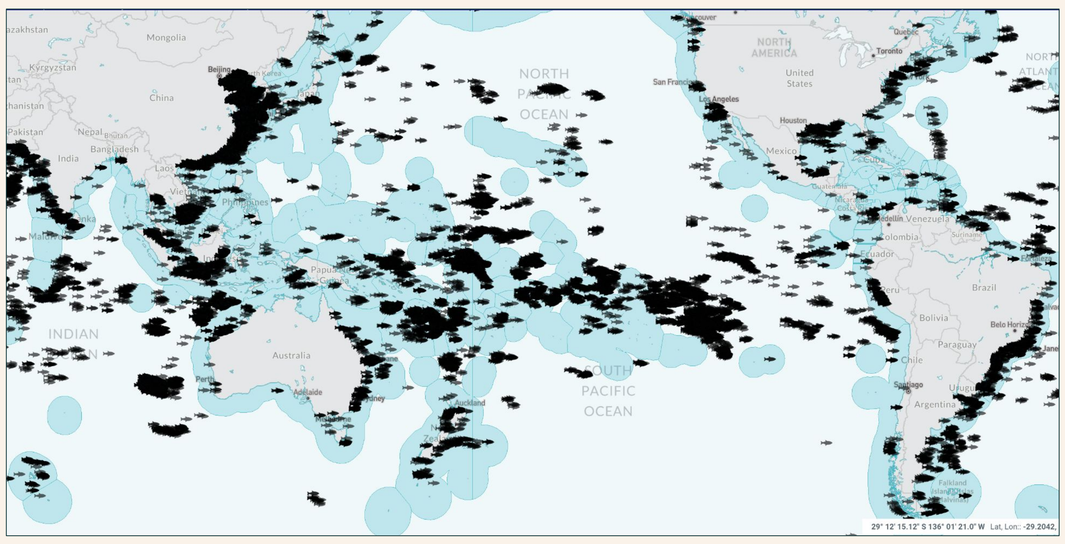
Transiting



In Seattle!

Evaluations

- Evaluated quality of fishing events directly across global sample of production events (71% accuracy)
- Minimized “Obvious” Errors by viewing outputs from users perspective

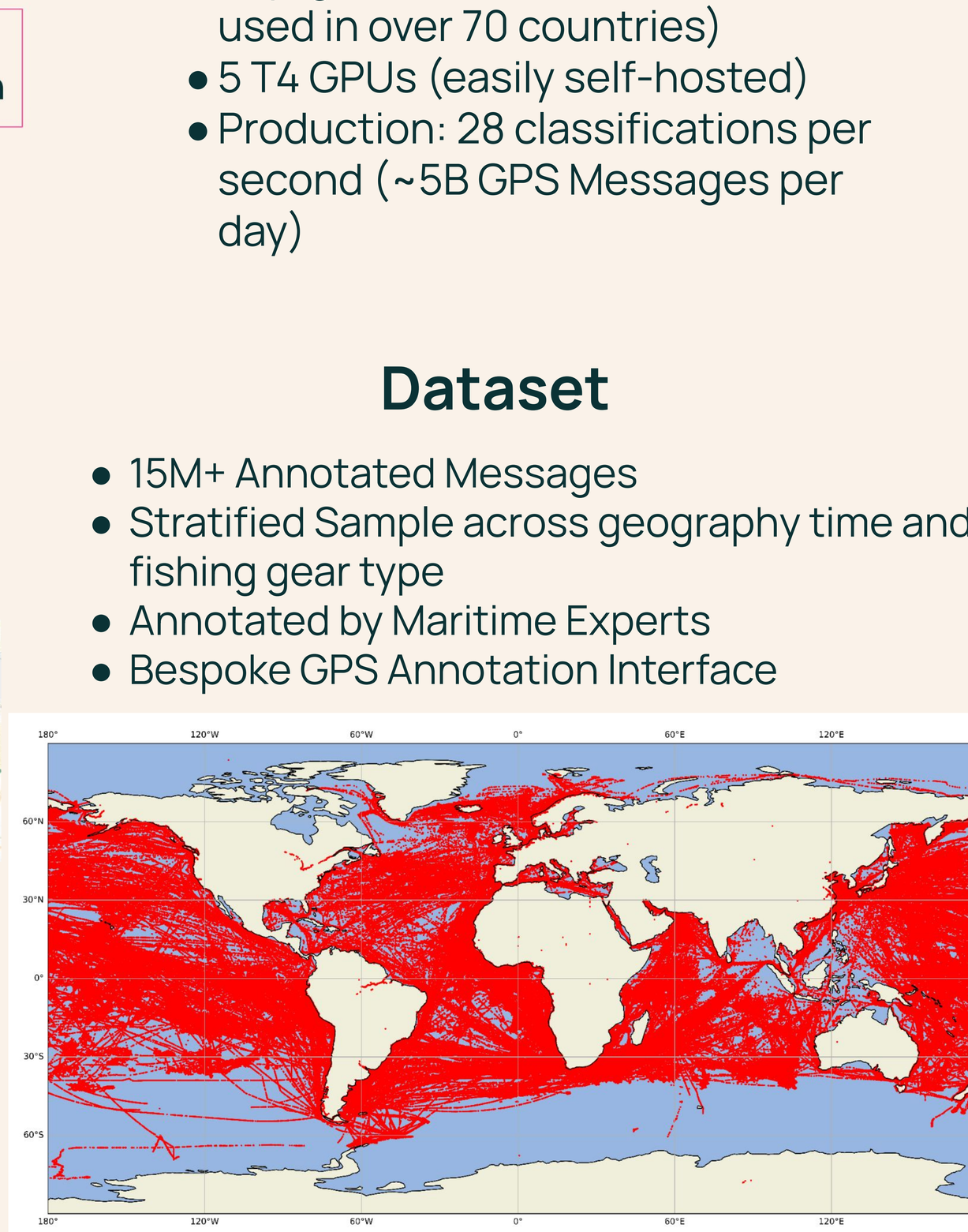


Model Deployment

- Real time outputs (deployed in Skylight a maritime awareness tool used in over 70 countries)
- 5 T4 GPUs (easily self-hosted)
- Production: 28 classifications per second (~5B GPS Messages per day)

Dataset

- 15M+ Annotated Messages
- Stratified Sample across geography time and fishing gear type
- Annotated by Maritime Experts
- Bespoke GPS Annotation Interface



Geographic distribution of annotated training data

Takeaways

- Focus on efficient creation of large, quality datasets
- Evaluate Model from User’s Perspective (ie as part of a system)

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