mix

Combient Mix

Johannes Graner – Machine Learning Engineer

Agenda ——

- My background in Maths at UU

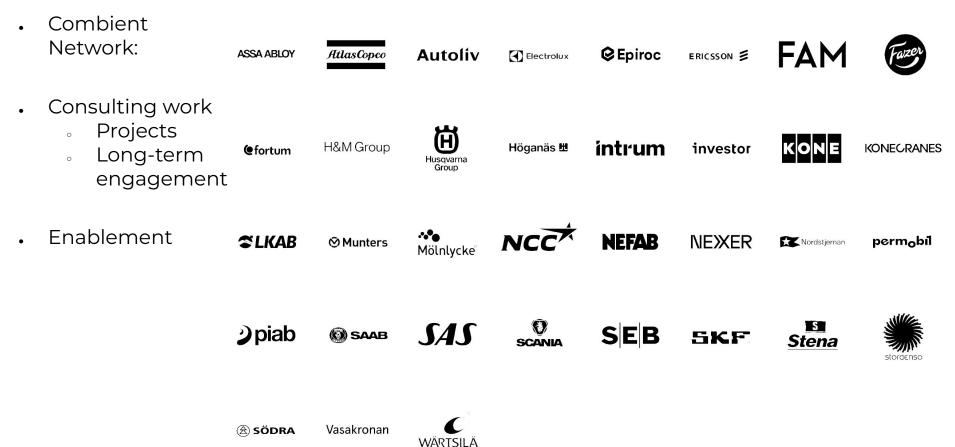- Working at Combient Mix

- Example client project

Johannes' Maths background

- Bachelor in Mathematics at UU
  - Mostly standard courses, but no algebra beyond Algebra II
  - Several programming and Scientific Computing courses
  - Lots of probability and statistics starting from year 2

- Master in Mathematics (applied mathematics and statistics) at UU
  - Integration theory for solid measure-theoretical statistics
  - Almost every statistics course available
  - Several Data Science and programming courses
  - No applied mathematics outside statistics or Data Science

- A write-up of all the courses I took is available in GitHub

Working at Combient Mix

- Combient Network:

- Consulting work
  - Projects
  - Long-term engagement

- Enablement

Working at Combient Mix

- Three main technical roles
  - Data Scientist
    - Explore and analyze data
    - Build models (classical statistics, ML, optimization, etc.)
    - More mathematics, less programming
  - Machine Learning Engineer (Johannes)
    - Deploy models to production
    - Automate and optimize model training and usage
    - Balances mathematics and programming
  - Data Engineer
    - Build and automate data pipelines
    - Less mathematics, more programming

Client project: Södra Flight Tower

- Södra is a forestry cooperative in Southern Sweden (Götaland)

- Part of the Combient Network

- Wants to optimize their value chain
  - Harvesting trees
  - Sawmills saw logs into planks
  - Pulp mills turn scraps into paper pulp
  - Byproducts like sawdust are sold to power plants

Client project: Södra Flight Tower

- Optimizing byproduct usage
  - Linear Optimization (LP)
    - $x \in R_{\geq 0}^n$, $Ax < b$, maximize $c^T x$
  - Data-driven constraints (b) and coefficients (A)
    - E.g. max inventory capacity, fuel prices
  - Results are presented in a web application
    - Tactical planning (what volumes should be delivered to which customer this month?)
    - Strategic planning (what customers should we aim to sign contracts with next year?)

Questions?

- [Combient Mix Website](#)

- [Johannes LinkedIn](#)

- [Johannes GitHub](#)

- If you're interested in applying at Combient Mix, please send an email to Åsa Wilson, our Head of HR and Culture asa.wilson@combient.com