Titel	The Non-Random Forest: Machine learning for prediction of wood properties
Allmänt om Holmen	**The future grows in the forest** Holmen is one of the biggest forest owners in Sweden and the growing forest is the basis of our business. We are part of the ecocycle from seedling to plank, where the raw material is refined into everything from wood for climate-smart buildings to renewable packaging, magazines and books. We also produce our own renewable energy from hydro and wind power. With a clear focus on sustainability in all aspects, Holmen contributes to a brighter future.
Beskrivning	Holmen puts efforts towards digitalization in order to utilize data better and thereby create more value both within our organization and to our customers. We have a very modern GIS platform that gives us great opportunity for this type of data utilization. This thesis will be a trial to analyze data existing data to connect our forestry with our saw mill operations in a better way. For the Holmen saw mill in Iggesund the limits for what products can be sawn are set by the wood properties. To improve production planning in the saw mill Holmen would like to have better prognosis that could predict which properties the logs will have. In this thesis you will use machine learning to combine the forest data, which mostly is geographic (GIS data), with data collected from measurements of single logs. The goal is to use this data to create a model that is able to predict the wood properties long before logs are harvested. The thesis will be done in collaboration with Esri – a market leading provider within analysis, visualization and management of spatial data. During the thesis you will get continues support from Esris Swedish staff, access to the full ArcGis platform and free access to all of Esris Courses. You will also get to visit Esris headquarter in Redlands, California to meet there product specialists and data analysts. There you will get in-depth lectures of the possibilities with the possibilities of combining spatial data with AI.
Mål	Prediction of wood properties
Önskad studieinriktning	Statistik och maskininlärning
Kontakt(er), Holmen	• David Runosson, Holmen Development (073-280 22 77, david.runosson@holmen.com) • Lisa Nilsson, Holmen Forest (070-377 82 02, Lisa.Nilsson@holmen.com)
Ämne	Signal Processing/Automatic Control/ Process Modeling/Statistics/Machine Learning
Placering	Örnsköldsvik (Forestry HQ
Omfattning	30 hp (Master)

1. Kvantificering av processvariationer med termografi som ver

2. Användning av undershållsdata för bättre processstyrning

3. Davids skogstokig project
4.

5. Processdatautvärdering och koppling till QCS data
   a. Sammanfattning på pappersmaskinen med hög samplingsfrekvens och identifikation av orsakerna till de deterministiska avvikelser

6. Materialvariationer i CD och deras betydelse för mispassning

- Marknadsföring?
- Betingelser?
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