Contribution 146 in session “Innovation-driven developments in harvesters and forwarders“

Estimating the harvester head’s position - a missing link to the future’s precision forestry

Authors: Lindroos, Ola; Ringdahl, Ola; La Hera, Pedro; Hohnloser, Peter; Hellström, Thomas

SLU, Sweden, ola.lindroos@slu.se

Keywords: Spatial modelling, ALS, timber traceability, automation, StanForD, IMU, joint sensors, laser.

Forest machines used for fully mechanized cut-to-length (CTL) harvesting are technically advanced, with, for instance, automatic mechanical measuring of stem diameters and lengths during harvest. This information is processed in real-time optimization algorithms to support value maximizing cutting of stems into logs. Moreover, the information is transferred from the machines and used in central systems for managing wood supply of forest industries. These information management systems have been present since the 1990-ies in Sweden and Finland, and constantly being refined. Initially, there was only aggregated information at the stand level, whereas data currently starts to be disaggregated spatially within stands based on the machine’s position. However, actual position of the harvester head relative to the machine’s position is not known, besides that is must be somewhere within the cranes reach. Albeit the poor accuracy, there are already some practical applications developed with the current positioning. However, we are confident that the full potential of existing data gathering is not yet embraced due to insufficient accuracy in harvester head positioning. Moreover, we are confident that increased precision will unlock many intriguing possibilities for the forestry of the future and for other related areas. In this study, we investigate the possible benefits of having high precision spatial data for the harvester head’s location, and compare these benefits with the efforts necessary to collect and compute such data. Moreover, we report the outcome of field studies of implementing two of the methods.