Carl Elgin

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Education

- Master of Science in Statistics – *KU Leuven (Belgium)* 2017–2019
  - Completed an interdisciplinary program, accredited by the Royal Statistics Society (UK), with Cum Laude distinction.
  - Courses: Multivariate Analysis, Mixed Models, Generalized Linear Models, Survival Analysis, Time Series Analysis, Experimental Design, Optimization, Machine Learning, and Artificial Neural Networks.

- Master thesis: *Reliability Analysis of Mechanical Equipment in a Cement Production Plant*
  - Developed an integrated predictive model (accounting for event history, condition monitoring, and production throughput) used it to identify the reliability of the mechanical equipment, and made maintenance-specific recommendations to improve reliability.
  - Used R and Python, to perform extensive preprocessing, cleaning, transformation, and integration of 3 years of stoppage records, vibration measurements, and monthly production totals coming from flat files of various formats (HTML, Excel).
  - Performed extensive feature extraction including text mining, natural language processing, and part-of-speech tagging to identify the failure mechanism, maintenance action, and repair status for each failure event.
  - Performed a criticality analysis (identifying cement mills and fans as the most critical equipment), disproved presence of trend in inter-failure durations, and identified the potential for event clustering.
  - Estimated semi-parametric (stratified extended Cox) and fully parametric (accelerated failure time) models and determined that decreasing production load and replacing (compared to repairing) broken components significantly decreased the risk of failures in cement mills and fans.

- Bachelor of Science in Informatics – *University of Michigan* 2009–2014
  - Through the Informatics program, I explored a cross-disciplinary approach to the intersection of technology and human interaction. I learned concepts including complex networks (technical and relational), statistics, mathematics, data analysis, usability, and object-oriented programming.

Employment

- Infrastructure & Operations Analyst – *ADP* 2014–2017
  - Remotely managed all enterprise-level storage arrays and Fibre Channel infrastructure within two Tier-4 data centers, supporting all of ADP's internal and externally hosted suite of products.
  - Coordinated with vendors to troubleshoot issues and ensure storage hardware/firmware is supported in accordance with established maintenance cycles, repair practices, and change control.
  - Collaborated with Service Management to design and implement purpose-driven performance and capacity reports in order to protect Service Level Agreements, and prevent outages of business critical and client-facing applications.

- Enterprise Storage Intern – *ADP* 2013–2014
  - Developed internal performance monitoring application by aggregating data streams from 37 proprietary Network Attached Storage (NAS) arrays across multiple data centers, performing statistical analysis in R, and distributing via an interactive web interface.
  - Created unique performance profiles detailing latency, CPU utilization, and network throughput of ADP products by aggregating data from the underlying storage arrays dispersed across multiple data centers.
  - Collected performance and capacity data from NAS and SAN storage arrays for long-term benchmarking, historical investigation, and real-time management.