

AKHMAD FAUZI NURULHAMZAH

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PROFESSIONAL SUMMARY

Data scientist with a Master of Data Science (Monash University Indonesia, LPDP scholar) and 12+ years of forestry-industry experience, including 8+ years in Internal Audit. Master's thesis applied deep learning (multitask instance segmentation and regression) to automate forest inventory from RGB-D imagery for tropical carbon accounting, with a manuscript in preparation for submission to Ecological Informatics. Combines applied machine learning and computer vision skills (PyTorch, Detectron2, HPC/SLURM training) with forestry, risk, and internal-control domain depth, plus an analytics track record spanning SQL, Python, R, and BI dashboarding.

SKILLS

Machine Learning / Computer Vision: PyTorch, Detectron2, scikit-learn, XGBoost, Deep Learning, Instance Segmentation, Multitask Learning, Bayesian Networks (pgmpy), Conditional Random Fields, HPC/SLURM Model Training

Data Analysis: Python, R, SQL (Google BigQuery), Causal Inference (Propensity Score Weighting, Causal Forests), Statistical Modelling (LME, GAM), Data Wrangling, Hypothesis Testing, Regression, Clustering, Exploratory Data Analysis, Big Data Processing

Visualization / BI: Tableau, Looker Studio, R Shiny

GIS / Geospatial: ArcGIS, Geographically Weighted Regression (GWR)

Soft Skills: Research Methods, Technical Writing, Risk Assessment, Project Management, Cross-functional Communication, Attention to Detail, Regulatory Compliance, Stakeholder Engagement, Data Storytelling

EDUCATION

Formal Education

Master of Data Science | Monash University Indonesia | 2024 - 2026

LPDP Scholarship Awardee (Indonesia Endowment Fund for Education, Ministry of Finance)

WAM: 71.9/100 (Distinction average)

Thesis: "Multitask Learning for Tree Instance Segmentation and Diameter Estimation from RGB-D Imagery in Agroforestry and Rainforest Environments." Grade: High Distinction (80/100). Supervisor: Dr. Muhamad Risqi Utama Saputra. Full details under Selected Projects.

Relevant coursework: Data Exploration & Visualisation, Data Wrangling, Statistical Data Modelling, Applied Data Analysis, Data Processing for Big Data, Introduction to Databases, Algorithms & Programming Foundations in Python, IT Research Methods, Project Management.

Bachelor of Forestry Science | Bogor Agricultural University | 2004 - 2009

GPA: 3.09

Thesis: "Occupational Health and Safety Analysis on Timber Harvesting at a Community Forest (Koperasi Hutan Jaya Lestari, Konawe Selatan)"

Non-Formal Education

Full Stack Data Analytics | RevoU | Jan 2023 - Apr 2023

Cumulative score: 100/100

SQL (joins, CTEs, window functions), Python (data cleaning, statistical analysis, clustering), Excel, data visualization (Tableau, Looker Studio), hypothesis testing and regression.

SELECTED PROJECTS

Multitask Learning for Tree Instance Segmentation and Diameter Estimation from RGB-D Imagery | *Master's Thesis, Monash University* | 2026

PyTorch, Detectron2, MaskDINO, FocalNet-L, HPC/SLURM | Grade: High Distinction (80/100)

- Designed and trained a multitask deep learning model (FocalNet-L backbone + MaskDINO, extended to accept 4-channel RGB-D input) to jointly segment tree instances, classify species, and estimate trunk diameter (DBH) from ground-level forest imagery, directly applicable to Indonesia's forest carbon accounting and inventory needs.
- Devised a controlled experimental design isolating the contribution of the depth channel from pretraining confounds; showed depth improves segmentation AP50 by up to 16.93 percentage points across six backbone architectures tested.
- Achieved 62.29% test AP50 for joint segmentation and a diameter estimation RMSE of 7.62cm, evaluated end-to-end on the model's own detections rather than ground truth.
- Trained and evaluated models on a SLURM-managed HPC cluster (NVIDIA L40S GPUs) using PyTorch and Detectron2, on a synthetic Unreal Engine 5 dataset (SPREAD); authored the full training, evaluation, and analysis pipeline in Python.
- Manuscript in preparation for submission to Ecological Informatics (as of September 2026).

Predictive Analytics in Education: A Multi-Model Approach to Student Retention | *Python, scikit-learn, XGBoost* | 2026

- Segmented 4,424 student records via KMeans/PCA and validated risk factors with chi-square and ANOVA tests, then benchmarked Logistic Regression, Random Forest, and XGBoost with 10-fold cross-validation and a paired t-test on the fold scores.
- Achieved 78.5% test accuracy and a 0.80 F1-score (0.79 recall) on the dropout class with XGBoost, identifying units passed and tuition payment status as the strongest predictors of attrition.

Climate Change Impact on Global Agriculture: Causal Analysis of Adaptation Strategies | *R, Causal Inference, CRISP-DM* | 2025

- Applied Linear Mixed-Effects models and Generalized Additive Models to quantify linear and non-linear effects of temperature, fertilizer, and pesticide use on crop yield and economic impact across 10,000 records spanning 1990-2024.
- Developed a Random Forest model to predict crop yield and economic impact from climate and agronomic variables, validated through residual diagnostics and feature-importance ranking.
- Estimated heterogeneous treatment effects of four climate-adaptation strategies using Propensity Score Weighting and Causal Forests, identifying which strategies work best by crop and region.

Risk Modeling and Event Classification: Bayesian Networks and CRF | *pgmpy, Conditional Random Fields, Python* | *Team of 3* | 2026

- As part of a 3-person team, modeled car accident risk with a Bayesian Network and ran a sensitivity analysis on its conditional probability distributions to trace how shifts in driver and vehicle risk propagate through the network.
- Trained a Conditional Random Field sequence model to extract financial events (mergers, acquisitions, earnings, stock movements) from text, reaching a 0.97 weighted F1-score, and validated generalization via train/validation/test comparison to rule out overfitting.

Regional Food Security & Vulnerability Dashboard, Indonesia (2018-2024) | *R Shiny, GWR, ARIMA* | *Team of 3* | 2025

- As part of a 3-person team, built an interactive R Shiny dashboard analyzing food security, poverty, and stunting trends across Indonesian regencies and cities, applying Geographically Weighted Regression to map locally significant socioeconomic drivers.
- Produced ARIMA forecasts of the food security index, stunting, and undernourishment (PoU) through 2030 to flag provinces at risk of missing 2030 targets, and designed the dashboard using the Five Design Sheets visualization framework for multi-audience interpretability.

PROFESSIONAL EXPERIENCE

Internal Auditor | *Araya Bumi Indonesia (Djarum Forestry)* | *Dec 2013 - Oct 2022*

- Conducted recurring internal audits (approximately 1-2 per month) across 4 forestry operating units (PT SPA, PT DML, PT SRL, and PT WHP), assessing the implementation of internal control and risk management systems against established regulations and SOPs.
- Served as Lead Auditor on select engagements, directing audit teams of 2-3 members through examinations and tests across Operations, Human Resources, and Financial Information.

- Delivered audit findings and improvement recommendations to site management, supporting procedural refinement and performance improvement across the four audited sites.

Continuous Improvement Specialist | *Satria Perkasa Agung (Sinarmas Forestry) | Jan 2013 - Nov 2013 (concurrent additional role)*

- Monitored adherence to SOPs and tracked monthly district performance achievements.
- Gathered and documented information while contributing to the execution of Improvement Projects.

District Environmental Officer & Planning Survey Specialist (Dual Role) | *Satria Perkasa Agung (Sinarmas Forestry) | May 2010 - Nov 2013*

- Supported and participated in monitoring AMDAL (Indonesia's environmental impact assessment) activities and conservation operations aligned with the Conservation Management Plan (CMP).
- Prepared and maintained documentation for Indonesia's forest sustainability and timber-legality certifications (PHPL, PHTL, VLK, TLTV), ensuring all district certification records were complete and audit-ready.
- Developed comprehensive work plans and budgets for the Planning Survey Department.
- Collected, analyzed, and interpreted data to establish annual work plans and track the District's operational plan against key planning indicators.
- Provided GIS-based mapping support for the preparation of RKT (Rencana Kerja Tahunan / Annual Work Plan), delineating harvesting and planting block boundaries to meet regulatory planning and submission requirements.
- Collaborated with operational teams (Harvesting and Plantation), using GIS to map data from planting and harvesting measurements for Work Agreement Letters and payment attachments.

ORGANIZATIONS

- Sekretaris Serikat Pekerja PT Arara Abadi Distrik Serapung (2011 - 2012)

CERTIFICATES

- IRCA Quality Management System Lead Auditor/Auditor Training Course, TUV Rheinland (Nov 2017)
- Comprehensive Risk Based Audit, Mutual Resources (Oct 2015)

LANGUAGES

Indonesian (Native), English (IELTS 6.5)