LENNART LANGOUCHE

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EDUCATION

University of California, San Diego (UCSD)	**PhD**	Nanoengineering, focus: Biomedical Nanotechnology	**2021**
Rady School of Management, UCSD	**Certification**	Mini-MBA	**2018**
KU Leuven, Chalmers (dual degree)	**MS**	Nanoscience and Nanotechnology	**2013**
KU Leuven	**BS**	Engineering (major: electrical, minor: mechanical)	**2011**

TECHNICAL SKILLS

Data Analysis (Python, R, MATLAB)	SQL	PCR/dPCR
Cloud Compute (Oracle)	Machine Learning (Scikit-learn, PyTorch)	Microscopy
Experimental Design	Data Visualization (Matplotlib, Tableau)	Image Processing (Fiji)

CAREER EXPERIENCE

IQVIA | Senior Strategy Consultant, Life Sciences   AUG 2021 — APR 2023

Managed small teams to solve complex business cases for major pharmaceutical companies and biotech firms.

- Led a team to investigate SKU launch strategies for oral oncolytics and explore implications for stakeholders and product life cycle management using primary and secondary research.
- Managed a team to compile and analyze competitive intelligence data and perform additional secondary research to inform pricing strategy for a major pharmaceutical company.
- Headed a team researching rare disease drug analogues to inform drivers of sales erosion and revenue forecast for blockbuster drug due to loss of exclusivity.
- Assessed commercialization potential of blockbuster follow-on drug using KOL/prescriber interviews, conjoint and analogue analysis.

UCSD @Fraley Lab | PhD Researcher in Biomedical Nanotechnology   SEP 2015 — SEP 2021

Helped develop a custom digital-PCR high-resolution melt platform for infectious disease diagnostics. My contributions:

Project 1: Spearheaded project to find the resolution of the digital PCR-based infectious disease diagnostic platform, using noise modeling and data augmentation, allowing for benchmarking against established technologies.

- Improved data processing pipeline to transform microscopy image stack into loss-of-fluorescence time series data using image analysis and processing tools in ImageJ and Matlab and implemented artifact removal.
- Used Python and R to compare performance of machine learning methods (kNN vs. tree-based ensemble models) using different distance measures (dynamic time warping vs. Euclidean distance) for a multi-class time series classification problem to identify pathogens, using their melt curve 'signature'.
- Presented research at the UC AI in Biomedicine Conference and published results in Bioinformatics.

Project 2: Applied a probabilistic machine learning approach for anomaly detection, used for novel genotype detection.

- Used Scikit-Learn to compare five ML methods for the task of anomaly detection on the lab's melt curve data: Logistic Regression, Naïve Bayes, Support Vector Machines, Neural Networks and Random Forest.
- Both Random Forests and SVMs were able to successfully achieve anomaly detection with a sensitivity of 0.94 and a specificity of 0.96, outperforming the other classifiers.

Project 3: Developed a novel probe for simultaneous and universal detection of bacterial and fungal pathogens using single-channel melt multiplexing with an intercalating dye.

Illumina | Product Management Intern   JUN 2018 — DEC 2018

- Formulated market development strategy including voice of customer, competitive and technological analysis, and financial forecasting. Presented findings to upper management, leading to a 15% YoY budget increase to pursue this market opportunity.
- Created marketing video combining key stakeholder input, resulting in a top ten most-viewed company video.

APD Consulting Club @UCSD **| Vice-President**   *SEP 2016 – AUG 2018*
- Organized seven club events, including a case competition and an annual consulting bootcamp.
- Increased number of consulting firms visiting UCSD by 20%.
- Led a team of seven that assessed market entry strategies for a pre-clinical pharmaceutical company.

Blue LINC @UCSD **| Incubatee**   *AUG 2017 – APR 2018*
- Spent eight weeks shadowing clinicians at three local hospitals to identify unmet healthcare needs.
- Led a four-member team that assessed the business viability of product solutions to pneumothorax as a complication of percutaneous chest biopsy.

OTHER EXPERIENCE

Numer.ai **| Participant/Contributor**   *AUG 2021 – PRESENT*
- Modeled a regression problem from exploratory data analysis to feature engineering, applying boosted decision tree models (XGBoost/LightGBM), and creating ensemble methods to successfully predict stock market data.
- My best model is a top 5% performer of over 5k models made by over 1k data scientists and is actively contributing to the Numerai hedge fund meta-model.

John Hopkins Course (online) **| Algorithms for DNA Sequencing**   *SEP 2023*
- Introduction to algorithms for alignment and assembly including hands-on coding experience.

UCSD Extension Certificate **| Dashboards and Data Visualization for Data Analysis**   *APR 2018 – JUN 2018*
- Theory and hands-on experience building dashboards using Tableau

UCSD Extension Certificate **| Project Management for the Collaborative Workplace**   *JAN 2018 – MAR 2018*
- Managed a three-month community project to improve student mental health services at UCSD.

UCSD Extension Certificate **| Effective Leadership and Teamwork in the Workplace**   *OCT 2017 – DEC 2017*
- Completed certificate program including ten workshops on leadership and self-development.

Rady School of Management @UCSD **| Technology Management and Entrepreneurism Fellow**   *SEP 2016 – JUN 2017*
- One-year certificate program exposing me to business and entrepreneurship fundamentals.
- Developed lab-to-market strategy for novel cancer diagnostic technology and presented at pitching competition.

MENTORSHIP | TEACHING

IQVIA **| Mentor for new PhD recruits**   *JAN 2022 – MAR 2023*
- Provided mentorship on topics such as career development and use of IQVIA databases.

UCSD GSA **| Mentor for new PhD students**   *SEP 2020 – SEP 2021*

BAEF **| Mentor for new B.A.E.F. Scholars at UCSD**   *SEP 2016 – SEP 2017*

UCSD **| Teaching Assistant**   *SEP 2015 – SEP 2021*
- Served as a teaching assistant for 7 quarters (5 courses), holding office hours and leading discussion sections.

HONORS | AWARDS

2018   1st Place, L.E.K. Consulting Case Competition
2017   1st place, IXL Innovation Olympics
2015   B.A.E.F. Fellow
2014   IAESTE Scholar
2012   Erasmus Mundus Consortium Scholar

SELECTED PUBLICATIONS

- **L. Langouche**, Advancing Rapid Infectious Disease Screening Using a Combined Experimental/Computational Approach, University of California, San Diego (2021)
- **L. Langouche**, A. Aralar, M. Sinha, S.M. Lawrence, S.I. Fraley, T.P. Coleman, Data-driven noise modeling of digital DNA melting analysis enables prediction of sequence discriminating power, Bioinformatics, 6 (2020)
- W. Cai, E. Wang, P.W. Chen, Y.H. Tsai, **L. Langouche**, Y.H. Lo, A microfluidic design for desalination and selective removal and addition of components in biosamples, Biomicrofluidics, 13.2 (2019)