

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 projects and teams to solve complex business cases for major pharmaceutical companies and biotech firms. Topics include competitive intelligence, financial forecasting, opportunity assessment, pricing and market access, and product life cycle strategy. Representative projects:

- 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.
- Assessed commercialization potential of blockbuster follow-on drug using KOL/prescriber interviews, conjoint and analogue analysis.

[UCSD @Fraleigh 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 methods.

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 External Affairs

SEP 2016 – AUG 2018

- Led initiatives to build and strengthen the organizations' marketing, communications, and relationships with consulting firms around the country, and organized networking and consulting competition events.
- Led a team of seven that assessed market entry strategies for a pre-clinical pharmaceutical company.

Blue LINC Biomedical Incubator @UCSD | Incubatee

AUG 2017 – APR 2018

- One-year immersion into the Stanford Biodesign curriculum taught by entrepreneurial leaders
- 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 Data Science Competition | Participant/Contributor

AUG 2021 – PRESENT

- Modeling a regression problem from exploratory data analysis to feature engineering, applying boosted decision tree models (XGBoost/LightGBM), creating ensemble methods, and deployment to the cloud to successfully predict stock market data on a daily basis. 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 (numer.ai/lenlan15)

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 incoming PhD recruits

JAN 2022 – MAR 2023

- Provided mentorship on topics such as career development and use of IQVIA databases.

UCSD GSA | Mentor for incoming PhD students

SEP 2020 – SEP 2021

BAEF | Mentor for incoming 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)