



Northeastern
D'Amore-McKim School of Business
DATA Initiative

ANALYTICS RESEARCH LAB

SPRING 2020

ABOUT THE LAB

The DATA Analytics Research Lab at Northeastern University solves challenges presented by organizations and the natural environment. Projects encompass contemporary research, industry problems and wider issues in the social and natural environments.

The Analytics Lab runs during Fall and Spring semesters. Both graduate and undergraduate students can apply for consideration and selection is based upon the capacity to tackle high-impact analytics problems. Teams are curated to enable interdisciplinary dynamics that are proven to yield insights of greater scope and novelty.

The Analytics Lab is led by **Professors Koen Pauwels, Yakov Bart** and **Kwong Chan**.

**Over the past year,
the Lab had members from . . .**

 Northeastern University
**D'Amore-McKim
School of Business**

 Northeastern University
**College of Social Sciences
and Humanities**

 Northeastern University
**Khoury College
of Computer
Sciences**

 Northeastern University
College of Engineering

SPRING 2020

LAB STRUCTURE



The Analytics Lab recognizes people have diverse areas of expertise. Lab members are selected both for collaborative and technical competences. While faculty provide a foundational approach for investigating research problems in analytics and data science, student lab members are charged with identifying their own strengths and weakness and formulating a plan for training others while also receiving training they need. Exchange and teamwork are core to the lab.

Lab faculty provide structures for analytics research including:

- the philosophy of science and theory formulation.
- case study discussion of organization-wide response to analytics practices.
- current challenges posed by big-data.

Student lab members share their expertise through hands-on workshops. Past lab sessions include:

- Using Python to describe data and access SQL databases
- Using Jupyter notebook special libraries for analytics and machine learning How to visualize data effectively in analytics
- Effective presentation of analytics insights

During the semester students are assigned to teams designed to include a mix of technical and consulting skills and matched with an analytics project targeted at solving a business or academic research challenge.

EXAMPLE PROJECTS



HUBSPOT

Finding the Right Features.

Ever wondered if you have found all the best features of the software you are using? Hubspot did. They tasked a student team with finding out how the process of customer feature discovery was related to overall feature utilization during free software trials of HubSpot's many products. The team compared a range of machine learning approaches to identify prototypical discovery processes, allowing for deeper understanding of the gaps in feature utility that get in the way of user monetization and retention. Now the HubSpot Product teams will be able to optimize that experience and allow customers to successfully navigate the HubSpot platform.



SCHNEIDER ELECTRIC

From B2B to B2C

Schneider Electric (SE) is a global provider of energy and automation digital solutions for efficiency and sustainability. SE combines world-leading energy technologies, real-time automation, software and services into integrated solutions for homes, buildings, data centers, infrastructure and industries. To help SE's customers succeed in a more electric world and ensure they find the most beneficial products, SE gave a team of Northeastern students several years of sales data. The team was tasked to build a model that could identify patterns and guide selection. The student team created multiple Market Basket Analysis algorithms within Python to generate association rules to describe and predict buying behavior. This allowed the team to build a tool that found businesses who purchase like-minded products and in turn help Schneider provide more suitable product assortment. As a further benefit, potential inefficiencies within the supply chain were also highlighted. Visualizations within Tableau helped distill insights from these analyses. These tools provided proof points that demonstrate the value of customer data and guide further development of B2B and B2C product strategy.

STUDENT PROFILES



Aldo Pioline Antony Charles **Lab Expert in Residence**

Aldo, KCS '22, is working towards his master's in data science at Northeastern University's Khoury College of Computer Sciences. He is the expert in residence for the DATA Initiative and serves as a resource for students working on analytics projects in the Analytics Lab.

"The world is one big data problem and uncovering their underlying knowledge is the key to modern-day solutions. Data science is often thought to be fully dependent on machine learning which is not true. A lot of problems are efficiently solved by a simple statistical model. It all comes down to asking the right questions about the problem. Most of the questions that every data scientist or a developer comes across already have answers available. So, the actual skill lies not only in asking the questions but also knowing how to find the best answers. It is also important to remember it is ok to say 'No' if you don't know the answer. Teamwork, a core skill the members of DATA have is not about how much you know, it is about finding the skills of other people on the team and adding up their experiences which will always lead to the best result".



Kasia Kumor **Lab Research Analyst**

Kasia, DMSB '20, is working towards her Bachelor of Science degree in Business Administration at Northeastern University's School of Business. She is an inaugural member of the Analytics Lab.

"I am a fourth-year Marketing and Finance concentration with a minor in Business Analytics. One of my favorite projects so far is at the DATA initiative laboratory where I am getting the chance to work on solving problems in understanding online gaming. Theory helps you to make insights, otherwise, the technology can only give you numbers and dots. The theory is what helps you make sense of it. That is what the DATA initiative is doing, and that is why I have taken a business analytics minor."

STUDENT TESTIMONIALS

"I improved my technical and analytical skills because of the intensity of the Lab as well as my course load featuring Foundations of Data Science and Information Presentation and Visualizations. Now, I am comfortable in my ability to bring value to clients."

- **Alex Shaw**

"Once I started a data science project for another class, I realized how much I learned through this independent study. I was able to make visualizations with ease, I knew what data to analyze, and I felt more comfortable using machine learning models."

- **Chris Hadler**

"I came out convinced that data science will be integral in my future."

- **Hanson Truong**

"I was challenged to learn new skills, relearn my strengths and unlearn misconceptions. For 4 months, I had the opportunity to work with real-world data and validate my findings together with academic theories."

- **Karan Desai**

"I gained invaluable leadership experience managing an analytics project that will help further shape my professional goals."

- **Spencer Levy**

"I think the lab clearly shows how separating model creation and interpretation can be limiting; the interaction of them allows a data scientist to ask better questions and a manager/marketer to understand the flexibility of models to better suit the sample, business, or industry."

- **Kasia Kumor**

"I am extremely grateful that I was able to participate in the research project, as it enabled me to gain more exposure to data analytics with the utilization of Python."

- **Hannah Reyes**

"The DATA initiative analytics lab was transformational to help me understand data analytics in a deeper sense... It is a way of thinking and solving problems using analysis and critical thinking."

- **Yash Jain**

"The diversity of thought provided by students of different majors enhanced my overall experience. I learned much more during in-class discussions because my peers were able to provide new perspectives to discussion topics... each group member complimented one another because of our various strengths."

- **Alissa Chen**

CO-OP & IMPACT

"This was my first experience working with a real company to try and solve a case for them and it was an experience I truly enjoyed."

- **Arian Gokhale**

"The DATA lab was a great experience because it provided an environment to work on tasks that have the potential for legitimate and large scale impact."

- **Rohil Javeri**



Melissa Soong

BSBA Marketing Analytics '21

Melissa, DMSB '21, is working towards her Bachelor of Science degree in Business Administration at Northeastern University's School of Business with a Concentration in Marketing Analytics. She is the Project Manager for the DATA Initiative and works closely with the Analytics Lab.

Project Coordinator Co-op in Development Sciences Informatics Department, Genentech

"Working with the DATA Initiative has given me the opportunity to develop new technical skills and help me understand how data drives results. Combining my previous interests in understanding consumer markets with my newfound excitement for data has given me the opportunity to pursue a more technical second co-op. At Genentech, I am working with the Department of Informatics looking at how analytics powers internal scientific decision making and how cloud data repositories help with data management."



Chris Hadler

BS Economics '22

Chris, CSSH '22, is working towards his Bachelor of Science degree in Economics at Northeastern University's School of Social Science and Humanities. He is a student in the inaugural class of the DATA Initiative Analytics Lab.

Pricing and Profitability Team, Wayfair

"This class has driven me to a situation where I can and want to go into the analytics field. I've accepted a co-op at Wayfair to work in their Pricing and Profitability team which is largely an analytics role. One of the reasons why they offered me the position was because my experience in this project is so related to what I will be doing there."

SPRING 2020

N Northeastern
D'Amore-McKim School of Business
DATA Initiative

Digital, Analytics, Technology & Automation

Contact us at

Email: contact@datanu.org

LinkedIn: [@nudatainitiative](#)

Facebook: [@nudatainitiative](#)