

Armelle LE GUELTE

Data Scientist

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<https://github.com/AmyLG>

Throughout my academic career, I have been working with all kinds of data; collecting, applying statistical methods analyzing and presenting it at national and international conferences. Even though I love my research, I have gotten more and more interested about the information within the data and what can be done with it. So, in September 2020, I started to actively pursue a career in data science. I am looking forward to combining my academic background with data science to improve healthcare.

Key Skills

- **Python** – data manipulation and exploratory data analysis (EDA) using **pandas, numpy, regex, matplotlib, NLP**, machine learning using **scikit-learn**
- **R** – data manipulation and EDA with **tidyverse, dplyr, ggplot2, plotly** and interactive visualization using **R Shiny**
- **PostgreSQL** – database import and table manipulation (incl. complex joins)

Professional Experience

Part-time Data Scientist

09/2020 – 06/2021

Nashville Software School | Nashville, TN

9-month intense data science training preceded by a statistical refresher (“Statistics for Data Science”). The program focuses on practical application of Python, R and SQL to address real-world business problems by organizing and cleaning data, exploratory data analysis, machine learning, preparing data visualizations and effective data communication. Projects included:

- **Provider-Communities-Nashville**
Used Python (eg. pandas, etc) and PostgreSQL to prep and clean DocGraph HopTeaming (Medicare) data set to join with other data sets (eg. NPPES) containing provider and other relevant information. Finally, looked for “communities” of providers by using Neo4j (Louvain community detection algorithm) and R (ggplotly, shapefiles). The analysis revealed that providers-hospital communities are dominated by three major hospital systems and fall into geographic clusters. <https://sites.google.com/view/nashvilleprovidersds4/provider-communities>
- **Tennessee’s Opioid Crisis**
Used Python (eg. SQLAlchemy, pandas, plotly) to prep and clean the Medicare Part D prescriber file. The analysis revealed a disproportionate amount of opioids prescriptions in Scott County, TN. Interestingly, this has been traced back in our analysis to just one specific prescriber, who had two time more claims per Medicare enrollee than average, and prescribed popular opioids, such as Oxycodone and Hydrocodone three to four times more than other prescribers.
- **Mid-Course Capstone – Extinction Is Forever**
Created an interactive R Shiny catalog of endangered species featuring different details about the species, as its habitat (geographical region), different maps as well as analyzing the potential cause for the species disappearance. https://amylg.shinyapps.io/midcourse_extinction/

Staff Scientist

05/2018 – Present

Vanderbilt University | Nashville, TN

- Designed and executed research projects deciphering the mechanism dynamic of mammary cap cells and luminal cells in the mammary gland, a key process in breast cancer development
- Prepared manuscripts and grant applications

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- Other responsibilities include purchasing lab supplies, safety documentation, assisting, training and mentoring graduate, undergraduate and summer students

Postdoctoral Fellow

01/2013 – 05/2018

Vanderbilt University | Nashville, TN

- Focused on designing and executing research projects untangling the cap or stem cell fate in mammary glands by generating and analyzing transgenic lineage tracing *in vivo*. I was able to demonstrate that there are no resident stem cells in murine mammary glands after birth and maturation is orchestrated by differentiated cells. However, these cells are found and proliferate in breast cancer.
- Reviewed papers for different scientific journals, as well as participated on a board awarding grants.
- Presented my research at national and international conferences.

Graduate Student

09/2009 – 10/2012

Cochin Institute | Paris, France

Graduate work at a biomedical research institute. Thesis title: VE-cadherin plasticity in brain endothelial cells.

I discovered that cancer stem cells (CSC) have the ability to increase blood vessels permeability in the brain: a hallmark of brain cancer progression. I determined the mode of action of CSC, opening a door to future treatment.

- Teaching and mentoring experience gained through supervision of undergraduate students, ability to work with team members and collaborators
- Oral presentation at a national meeting, funded a competitive Ph.D fellowship

Education

Data Science Bootcamp | Nashville Software School | Nashville, TN

PhD in Cancer and Cell Biology, “honorable mention” | Université René Descartes | Paris, France

MS in Structure, Proteome and Functional Genomics (major in Pathological and Therapeutic Macromolecules) | Université Denis Diderot | Paris, France

BS in Biology, Biochemistry and Bioinformatics | Université de La Réunion | France

Additional Skills and Professional Development

Languages (French, native speaker; English, fluent)

Vanderbilt | Introduction to Data Science for Scientists (with Nashville Software School) 2019-2020

Learned programming tools in Python; complete a project in a team using publicly available data sets and attended several Case Sessions organized by data science professionals from different industries in Nashville.

Vanderbilt Post-doctoral Association (VPA) | Committee Member | 2018

Organized the VPA symposium where post-doctoral fellow presents their work by poster or talk.

Vanderbilt | Management and Business Principles for Scientist Module 2018

Classes and a team based-real-world business consulting challenge by a core faculty

Vanderbilt | Biostatistics | CQS Summer Institute 2016

Two weeks courses on observational studies, descriptive statistics, normal distribution, hypothesis testing, estimation, proportions, sample size and power and regression analysis

Vanderbilt | Program in Molecular Medicine 2015-2017

Courses, seminars and patient interaction under the guidance of a breast cancer clinical mentor