# Liubov Sobolevskaya

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## ADDITIONAL EDUCATION

**UC Berkeley Extension** Berkeley, CA

*Certificate in Coding* *Mar. 2023 - June 2023*

*Grade: 97.83% (A)*

I completed a comprehensive web development Boot Camp that provided hands-on experience. Projects encompassed various skills such as HTML5, CSS, JavaScript, command line usage, Bootstrap, web APIs, jQuery, server-side APIs, third-party APIs, Day.js, indexDB, Insomnia/Postman, AJAX, Fetch, JSON, Node.js, Express.js, REST API, server-side templating (Handlebars.js), Express Sessions, bcrypt, JWT, relational databases (MySQL with Sequelize ORM), non-relational databases (MongoDB with Mongoose ODM), object-oriented programming (OOP), imperative programming, declarative programming, TDD with Jest, React, React Hooks, JSX, frontend development, backend development, full-stack development, performance optimization, Webpack, PWA, Apollo GraphQL, Context API, and Stripe API.

## EDUCATION

**RWTH Aachen University** Aachen, Germany

*MSc, Mathematics, Minor in Computer Science* *Oct. 2012 – Sept 2016*

*GPA: 1.5 (on a scale from 1.0 'best' to 4.0 'worst'); Graduated with Distinction.*

Completed classes in Java, Data Mining, Artificial Intelligence, Efficient Algorithms, Algorithms and Data Structures, and Introduction to Functional Programming.

**Immanuel Kant Baltic Federal University** Kaliningrad, Russia

*Specialist Degree, Applied Mathematics and Computer Science* *Sep. 2006 – June 2011*

*GPA: 4.82 (on a scale from 5.0 'best' to 3.0 'worst'); Graduated with Distinction*

Completed classes in Mathematical Analysis, Algebra, Linear Algebra, Discrete Mathematics, Numerical Linear Algebra, Theory of Probability and Mathematical Statistics, C++, Assembly language, Algorithms and Data Structures, System Software and Application Software, Databases and Expert Systems, Computer Networking, Computer Graphics, Numerical Methods, Optimization Methods.

## PROJECTS

**Kaggle Competition RSNA Screening Mammography Breast Cancer Detection** *Nov. 2022 - Feb. 2023*

*Kaggle Leaderboard*

*93rd place out of 1687 (6%)*

I developed a breast cancer identification model using pre-trained ConvNeXt and TPU on Colab Pro. I enhanced the model's performance by preprocessing .dcm images, addressing data imbalance, and managing data with TFRecords stored on GCP.

**Kaggle Competition Google Universal Image Embedding** *July 2022 - Oct. 2022*

*Kaggle Leaderboard*

*48th place out of 1022 (5%)*

I used a pre-trained CLIP ViT model to create an image representation capable of retrieving relevant database images corresponding to a given query image. The model, trained on a TPU via Colab Pro, used a variety of datasets that were processed and stored on Google Cloud Platform (GCP). The purpose was to generate a robust and universal image embedding across numerous object types.

**Kaggle Competition PetFinder.my - Pawpularity Contest** *Sep. 2021 - Jan. 2022*

*Kaggle Leaderboard*

*83rd place out of 3537 (3%)*

I applied machine learning techniques to predict the 'Pawpularity' of pet photos. I utilized PyTorch and multiple pre-trained transformer models, including SWIN and ViT, to analyze raw images and metadata from thousands of pet profiles. Implementing cross-validation strategies with 5 and 10 folds, I trained these models to understand and predict the appeal of pet photos. I further improved the model's performance by computing optimal weights for each model during ensembling.

**Kaggle Competition Human Protein Atlas - Single Cell Classification** *Jan. 2021 - May 2021*

*Kaggle Leaderboard*

*74th place out of 757 (10%)*

I developed models capable of segmenting and classifying individual cells from microscope images for a more accurate understanding of protein localization. Using PyTorch framework, I employed pre-trained EfficientNet models and used IntegratedGradients to acquire confidence scores for predicted classes.

## PROFESSIONAL EXPERIENCE

**Career Break** *Sep. 2016 – Present*

While my husband was pursuing his PhD and I was on a dependent visa without work authorization, I participated in several Kaggle competitions. This allowed me to acquire skills in data analysis and machine learning. I learned Python along with numerous machine learning and deep learning libraries and frameworks. I reproduced algorithms such as A2C-PPO using TensorFlow and implemented models like Conditioned WGAN-GP, DCGAN, and WGAN-GP. Furthermore, I completed TensorFlow 2.x implementations of popular models such as RESNET, VGG, MOBILENET, and REGNET.

**RWTH Aachen University** Aachen, Germany
*Student Assistant* *Feb. 2016 – Sep. 2016*
*I created a library on C++ that incorporates a Low-Rank tensor format representation.*

**EUtech Scientific Engineering GmbH** Aachen, Germany
*Student Assistant* *May. 2015 – Jan. 2016*
*I implemented a program on C# and SQL to test different approaches for data extraction.*

**RWTH Aachen University** Aachen, Germany
*Student Assistant* *Oct. 2013 – Jan. 2016*
*I created a framework on Java for a research project on Revenue Management.*

## SELECTED SKILLS

**Languages:** Python, C/C++, Javascript, C#, Java

**Frameworks:** Pytorch, Keras, Tensorflow

**Libraries:** numpy, pandas, scikit-learn, matplotlib, xgboost

**Databases:** MySQL, MongoDB, Mongoose ODM, Sequelize ORM

**Developer Tools:** Git, Google Cloud Platform, Latex, Unit Testing w/ JEST

**Web Development:** Apollo GraphQL, React, MERN Stack, Express.js, jQuery, Redux, Webpack