AMADOU LATYR NGOM

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EDUCATION

M.Sc., Computer Science *May 2019 - May 2020 (Expected)*
Carnegie Mellon University

B.S. with Honors, Computer Science *August 2015 - May 2019*
Carnegie Mellon University *QPA 4.0*
Minor in Machine Learning

RESEARCH PROJECTS

JIT Query Compilation for In-Memory Databases *May 2019 - Now*

- Developing LLVM-based execution engine for supporting query compilation in an in-memory DBMS.

- Add support for on-the-fly transformation of relational query plans to the DBMS's internal AST.

- Implemented core query operators for index scans, joins, and aggregates.

- Extended the DBMS's engine to support parallel and vectorized built-in execution operators.

- Investigating how to extend the compilation framework to support stored procedures and UDFs.

Fast Transactional Workloads on Universal Columnar Formats *Jan 2019 - May 2019*

- Support transactional workloads on the Arrow columnar format

- Enable faster data exports to external analytics frameworks

- Implemented dictionary compression and ran benchmarks.

A survey of CNN-LSTM based image captioning *Jan 2019 - May 2019*

- Conducted a survey of image captioning techniques.

- Compared the performance of Merge and Inject architectures.

- Used object detection to improve the quality of the captions.

Caching On Erasure Coded Systems *Jan 2018 - May 2018*

- Study distributed caching algorithms in erasure coded systems

- Developed caching techniques with a central coordinator responsible for making decisions.

- Implemented standard techniques (e.g LRU, LFU, etc), and a Reinforcement Learning based technique.

PROFESSIONAL EXPERIENCE

Software Engineer Intern *May 2018 - August 2018*
Pure Storage *Mountain View, CA*
I worked on accelerating network transfers from Pure Storage to Amazon S3 by combining data deduplication with S3's multipart upload.

Software Development Intern *May 2017 - August 2017*
Zillow *Seattle, WA*
I worked on adding various features to the rentals section of Zillow's main website with the Apache Tapestry back-end framework, and the ReactJS and Mustache front-end frameworks.

TEACHING EXPERIENCE

Teaching Assistant
15-445, 15-645: Database Systems   *Fall 2019*
Taught by Andy Pavlo.

Head Teaching Assistant
15-440, 15-640: Distributed Systems   *Spring 2019*
Co-taught by Mahadev Satyanarayanan, Padmanabhan Pillai, and Daniel Berger.

Teaching Assistant
15-440, 15-640: Distributed Systems   *Fall 2018*
Co-taught by Yuvraj Agarwal and Daniel Berger.

Teaching Assistant
15-440, 15-640: Distributed Systems   *Spring 2018*
Co-taught by Mahadev Satyanarayanan, Padmanabhan Pillai, and Daniel Berger.

PUBLICATIONS

- Prashanth Menon and others, "Regret-Free Compilation: An Optimization Framework for Recompiling Queries on the Fly", Under Submission, 2019

- Tianyu Li and others, "Mainlining Databases: Supporting Fast Transactional Workloads on Universal Columnar Data File Formats", Under Submission, 2019

- Andy Pavlo and others, "Make Your Database Dream of Electric Sheep: Engineering for Self-Driving Operation", Unpublished Manuscript, 2019

AWARDS AND DISTINCTIONS

Siebel Scholarship   *2019-2020*
Awarded to students who have demonstrated academic and leadership excellence at the world's leading graduate schools of business and computer science.

Flag Bearer of the School of Computer Science   *2019*
Given to the student with one of the highest undergraduate performances.

Phi Beta Kappa Honors Society Membership   *2019*
Awarded based excellence and integrity in the studies of liberal arts and sciences.

SCS Dean's List   *Every Semester*
Awarded based on high QPA.

Best Student in Senegal   *2014*
Awarded to the student with the best achievements in nationwide academic competitions.

SKILLS AND INTERESTS

Tools and Frameworks	**Programming Languages**
Version Control: Git	<u>Extensive</u>: C/C++, Go, Python, Java.
Build Systems: Make, CMake	<u>Proficient</u>: SQL, HTML/CSS/JS, SML.
Web Development: Gorilla, ReactJS	
DBMS: PostgresSQL	
Machine Learning: Pytorch, Keras	