Sebastin SANTY

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EDUCATION

Present August 2015	Birla Institute of Technology and Science Pilani, GOA, India Bachelor of Engineering (Hons.), Electronics & Instrumentation

RESEARCH EXPERIENCE

Present July 2018	Carnegie Mellon University, Pittsburgh, PA, USA *Senior Thesis	Advisor: David Touretzky* Working on real-time obstacle avoidance and doorway navigation using a monocular camera on a low-computational robot like Anki Cozmo.
June 2018	University College London, LONDON, UK *Summer Research Internship	Advisors: Emine Yilmaz and Rishabh Mehrotra* Worked on Task-based Information Retrieval, specifically on recommendation by leveraging external ontology. Used the principles of Bayesian Rose Trees and Distance Dependent Chinese Restaurant Process to design a dynamically enriched ontology. Worked on several research ideas documented at: UserContext.

PUBLICATIONS

Sebastin Santy, Wazeer Zulfikar, Rishabh Mehrotra, Emine Yilmaz. *"Towards Task Understanding in Visual Settings"* 33rd AAAI Conference on Artificial Intelligence, 2019

[In-Review] **Sebastin Santy**, Rishabh Mehrotra, Emine Yilmaz. *"Leveraging Task Information for Question Recommendation"* 41st European Conference for Information Retrieval (ECIR), 2019

Lyndon White, **Sebastin Santy** *"DataDepsGenerators.jl: making reusing data easy by automatically generating DataDeps.jl registration code"* Journal for Open Source Software (JOSS), 2018

Prasad Talasila, Mihir Kakrambe, Anurag Rai, **Sebastin Santy**, Neena Goveas, Bharat M Deshpande *"BITS Darshini: A Modular, Concurrent Protocol Analyzer Workbench"* 19th International Conference on Distributed Computing and Networking, 2018

ENGINEERING EXPERIENCE

August 2018 May 2018	Julia Computing, NUMFOCUS, Remote *Google Summer of Code 2018	Mentor: Lyndon White* Added data repository support to DataDepsGenerators.jl, which in turn creates registration blocks for DataDeps.jl. DataDeps.jl helps in downloading scientific data with ease. Talk on this work delivered at PyData New York City 2018.
August 2017 May 2017	Mozilla Foundation, BUGZILLA, Remote *Google Summer of Code 2017	Mentor: Dylan Hardison* Revamped the existing bug filing interface (enter_bug.cgi) into a single page reducing the multi-hop db access and unnecessary template rendering. This enhanced the speed and performance in bug filing.

SELECTED PROJECTS

Generating Task-Aware Scene Descriptions   AUG'18 - PRESENT
Extension of work done at University College London Project page
> Leveraging TaskHierarchy138K which aids in the scene description generation by injecting task coherence scores into the state-of-the-art models. This helps the machines to be task-aware and produce more meaningful descriptions.
> Work accepted at AAAI 2019 Students Abstracts Program.

Analytics Sensor Test-Kit for Advanced Process Control
Nov'17 - May'18

Internet of Things with Nitin Sharma | Bill & Melinda Gates Foundation

> Designed a proof-of-concept IoT scalable interface to gather data from sensors installed at the waste water treatment site. This work was in collaboration with Ohio University, Cranfield University, and Caltech.

Study and Implementation of Critical Protocol Analysis
Jan'17 - May'17

Network Measurements with Prasad Talasila

> Spawned a cross-collaboration workbench for BITS Darshini, a modular, concurrent, customizable protocol analyzer. This is implemented for sharing the experiments among researchers and experts (for review) in order to save resources on analysis of large pcap files involved in the process.
> Modularized and refactored BackboneJS based client module. Decoupled the persistence code from the rest of the codebase. Also developed Vagrant container for easy installation.

Approximate Frontalization of Unconstrained Faces using BEGAN
Aug'17

Generative Adversarial Networks with Tirtharaj Dash

> Boundary Equilibrium GANs give the best results in creation of faces, owing to auto-encoder based GANs. Its interpolatory feature is able to generate a face out of two different faces.
> Devised a face-frontalize algorithm which used interpolation feature on mirrored side pose.

REST API: Custom Forms & GraphQL replacement
Dec'16 - Mar'17

With Dylan Hardison, Cameron Dawson & William Lachance (Mozilla)

> Made a custom form example application which uses REST API alongwith auth delegation callbacks to file the application as bugs on bugzilla.mozilla.org. This is to track the data generated through forms as bugs.
> Reponsible for introducing the integration of GraphQL based APIs on Mozilla's automation tool, Treeherder. GraphQL queries only the required variables from the database, which improves the efficiency drastically.

AutolabCLI: Command Line Interface for AutolabJS
Aug'16 - Dec'16

CLI Application with Prasad Talasila

> Developed a CLI for AutolabJS which helps in committing the code to local gitlab server, submitting the code from gitlab server to the evaluation nodes and retrieving the results using a socket connection.
> Published on npm and currently in use for programming labs at the university.

Talks and Conferences

PyData New York City
New York, NY, USA, Oct'18

Delivered a talk. Audience: Data Scientists
Invited to give a talk at PyData New York City 2018 on "Repeatable Data Setup for Repeatable Science" which was based on my Google Summer of Code work with Julia Computing.

Mozilla All-Hands (Group Meeting)
Austin, TX, USA, Dec'17

Attended (Invite Only). Audience: Mozilla Employees
Invited to attend Mozilla's conference held at Austin, Texas. Discussion on future plans of Bugzilla, its modernization, and chalking out the milestone for the year of 2018.

Recent Advances in Computer Vision and Deep Learning
IIIT Hyderabad, July'17

Attended. Audience: Academia and Industrial Researchers
Sessions taken by researchers from DeepMind, Facebook AI Research, Oxford VGG, INRIA, IITs. Various recent topics in Computer Vision and Deep Learning research were discussed.

Open Source

> Contributed to Firefox with a globally distributed workforce of Mozilla's engineers.
> Member and Reviewer for Mozilla B-Team, which handles Bugzilla and its operations.
> Managed AutolabJS (programming labs autograder) Github Organisation.
> Actively contributed to scikit-learn, a python-based Machine Learning library, for a period of two months.

Teaching and Leadership Roles

Present August 2016	**Open Source Development, OSD Labs, BITS Goa** *Founding Member* It is an initiative to foster the open source culture and innovation at BITS Goa. Hosted several informative and technical sessions. Also responsible for making Student Welfare Division software.

May 2018 Jan 2018	Computer Programming Course, CS F111, BITS Goa *Teaching Assistant* Responsibilities included evaluating labs, and helping students with the course in general.
December 2017 August 2017	Introduction to Programming, Center for Technical Education, BITS Goa *Co-Instructor* Introduced students to multiple programming paradigms, object oriented concepts and functional programming using the language Python.
December 2017 December 2015	Waves, Quark, BITSMUN, Festivals, BITS Goa *Lead Developer* Responsible for building and maintaining the websites of Waves (cultural fest), Quark (technical fest), BITS Model UN of BITS Pilani Goa.

Relevant Coursework

Computer Vision (16720B @CMU)*, Machine Learning, Data Mining, Symbolic Logic, Microprocessors and Interfacing, Digital Design, Signals & Systems, Computer Architecture, Neural Networks and Fuzzy Logic, Data Communication and Networks,Control Systems. (* = Auditing)

Honours and Awards

Iken Scientifica, 2009   IIT Bombay, '09
Student Icon of India
As a part of the winning team, got an opportunity to have a tête-à-tête with the former President of India, His Excellency, Dr. APJ Abdul Kalam. Entire show was aired on The National Geographic Channel and was supported by the Ministry of Science And Technology, Govt. Of India.

International Computer Fair And Seminar   Lucknow, '12
Runner's Up
Runner's up in the web design and implementation round at International Computer Fair and Seminar

National Standard Examination in Chemistry, 2015   TIFR, '15
State Topper
Secured a State Top 1% in NSEC, the prelims to International Chemistry Olympiad

Skills

Languages	Python, JS (Node), Julia, Perl, C, C++, SQL, VB.NET
Frameworks	OpenCV, Django, Flask, ExpressJS, ReactJS
Technologies	Heroku, AWS EC2, Travis CI, Docker, Vagrant, Grunt, GraphQL, PyTorch, LaTeX, Git, AutoCAD
Operating Systems	Ubuntu, CentOS, macOS, Windows
Spoken Languages	English, Hindi, Malayalam, Gujarati

References

David Touretzky	Emine Yilmaz	Rishabh Mehrotra	Neena Goveas
Research Professor, CMU	*Professor*, UCL	*Research Scientist*, Spotify	*Professor*, BITS Pilani
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