Sebastin Santy

9108, Gates Hillman Center for Computer Science
Carnegie Mellon University
5000 Forbes Avenue
Pittsburgh, PA, U.S.A

Web: sebastinsanty.com
Email: santy@cmu.edu
Github: sebastinsanty
Phone: +1 (412) 708-5517

Education

Birla Institute of Technology and Science Pilani, Goa, India
B.E.(Hons.), Electronics & Instrumentation   July'15 - Dec'18

Experience

Carnegie Mellon University School of Computer Science
Pursuing Bachelor Thesis advised by Prof. David S. Touretzky   July'18 - Dec'18
- Working on real-time obstacle avoidance and doorway navigation using a monocular camera on a low-computational robot like Anki Cozmo.

University College London
Research Internship advised by Prof. Emine Yilmaz & Dr. Rishabh Mehrotra   June'18
- 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

Julia Computing NumFOCUS
Google Summer of Code mentored by Dr. Lyndon White   May'18 - June'18
- 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.

Mozilla Foundation Bugzilla Team
Google Summer of Code mentored by Dylan Hardison   May'17 - Sept'17
- 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.

Publications

Santy,S.,Zulfikar,W.,Mehrotra,R.,Yilmaz,E., *"Towards Task Understanding in Visual Settings"*, 33rd AAAI Conference on Artificial Intelligence, 2019.

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

White,L.,**Santy,S.**, *"DataDepsGenerators.jl: making reusing data easy by automatically generating DataDeps.jl registration code"*, Journal for Open Source Software, 2018.

Talasila,P.,**Santy,S.**,Rai,A. et al., *"BITS Darshini: A Modular, Concurrent Protocol Analyzer Workbench."*, 19th International Conference on Distributed Computing and Networking (ICDCN 2018, ACM).

Projects

Generating Task-Aware Scene Descriptions
Extension of work done at University College London Project page   Aug'18 - Present
- 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.

Study and Implementation of Critical Protocol Analysis
Network Measurements under Dr. Prasad Talasila   Jan'17 - May'17
- 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.

Analytics Sensor Test-Kit for Advanced Process Control
Under Prof. Nitin Sharma — Bill & Melinda Gates Foundation   Nov'17 - May'18
- 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.

Approximate Frontalization of Unconstrained Faces using BEGAN
Generative Adversarial Networks helped by Dr. Tirtharaj Dash   Aug'17
- 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
Under Dylan Hardison, Cameron Dawson & William Lachance (Mozilla)   Dec'16 - Mar'17
- 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
CLI Application under Dr. Prasad Talasila   Aug'16 - Dec'16
- 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.

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.

Visits/Talks/
Conferences

Mozilla All-Hands (Group Meeting)
Attended (Invite Only).Audience: Mozilla Employees   Austin, TX, USA, Dec'17
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
Attended. Audience: Academia and Industrial Researchers   IIIT Hyderabad, July'17
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.

Interests	Information Retrieval, Computer Vision, Software Development.
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.

Leadership and Teaching

Open Source Development (OSD) Labs, BITS Goa

Founding Member — Sept'16 - Present

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.

Computer Programming Course (CS F111), BITS Goa

Teaching Assistant — Jan'18 - May'18

Responsibilities included evaluating labs, and helping students with the course in general.

Introduction to Programming, Center for Technical Education, BITS Goa

Co-Instructor — Aug'17 - Dec'17

Introduced students to multiple programming paradigms, object oriented concepts and functional programming using the language Python.

Waves, Quark, BITSMUN, BITS Goa

Lead Developer — Dec'15 - Dec'17

Responsible for building and maintaining the websites of Waves (cultural fest), Quark (technical fest), BITS Model UN of BITS Pilani Goa.

Honors and Awards

Iken Scientifica, 2009

Student Icon of India — IIT Bombay, '09

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

Runner's Up — Lucknow, '12

Runner's up in the web design and implementation round at International Computer Fair and Seminar

National Standard Examination in Chemistry, 2015

State Topper — TIFR, '15

Secured a State Top 1% in NSEC, the prelims to IChO

Skills

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