



Sidak Pal Singh

Education

- 2013 - **B.Tech in Computer Science**, *Indian Institute of Technology (IIT) Roorkee*,
Present CGPA: *9.184/10*.
Ranked amongst **top 5** students in the CSE undergraduate batch, on the basis of academics.

Award & Honors

- 2016 **Honda Y-E-S (Young Engineer & Scientists) Award, Y-E-S Plus Award**, *10,000 \$*,
Received financial support to pursue research in Japan (14 students selected all over India).
- 2016 **Google Venkat Panchapakesan Scholarship**, *750 \$*, Invited to visit Google & YouTube
Headquarters, USA (6 students selected all over India).
- 2016 **Google Microgrant**, *225 \$*, Secured funding to grow computer science in the local community,
in particular, for founding Machine Learning Reading Group (**MLRG**).
- 2016 **GHCI Invitation & Travel Grant**, from Google, to attend Grace Hopper Celebration India.
- 2015 **Star Mentor Award**, *IIT Roorkee Mentorship Programme*.

Publications

- IJCAI **Sidak Pal Singh**, Sopan Khosla, Sajal Rustagi, Manisha Patel, Dhaval Patel.
*SL-FII: Syntactic and Lexical Constraints with Frequency based Iterative Improvement for Disease
Mention Recognition in News Headlines*. Workshop on Advances in Bioinformatics and Artificial
Intelligence, 25th International Joint Conference on Artificial Intelligence (IJCAI), 1718:28–34, 2016.

Research Experience

- May 2016 - **Research Intern**, *Kyoto University*, Kyoto, Japan.
Jul 2016 Guide: [Prof. Marco Cuturi](#). [\[slides\]](#) [\[report\]](#)
- Studied the Monge-Kantorovich problem of Optimal Transport and its application in Machine Learning and Computer Vision.
 - Designed a loss function for training Generative Neural Networks based on *Entropy Regularized Optimal Transport* distances.
 - Learned the ground metric using LMNN (Large Margin Nearest Neighbor) on the feature activations obtained from the “Network in Network” pretrained convolutional neural network and visualized its working using *t-SNE*.
 - Implemented the system using *Chainer* neural network library in *Python*, with the generator network based on *DCGAN* architecture.
- May 2015 - **Research Intern**, *Purdue University*, West Lafayette, USA.
Jul 2015 Guide: [Prof. Bharat Bhargava](#). [\[paper\]](#) [\[github\]](#)
- Surveyed different concepts involved in feedback collection & aggregation in Service-Oriented Architecture.
 - Designed and implemented a method to estimate the relevance of reviews using their metadata, with particular focus to reviews with limited votes. Performed experiments on a data of over *10,000* reviews scraped from Amazon.com
 - Implemented consumer *Rating as a Service* (RaaS) architecture and provided a *RESTful API* for interaction which were written using *Node.js* and *Express* with *MongoDB* for persistence.

- Feb 2016 - **Research Assistant**, IIT Roorkee, Roorkee, India.
- Apr 2016 Guide: [Prof. Dhaval Patel](#). [\[paper\]](#) [\[github\]](#)
- Utilized lexical and syntactic constraints to identify a set of significantly covering word roots that signal disease mentions and extract the occurrence pattern of diseases in sentences.
 - Designed a method to weed out false positives, by using past experience gained in recognizing disease mentions with different word roots.
 - Extracted a total of 5058 correct disease mentions, 2.5x more than disease mentions obtained from the annotations simulated using a manually prepared list of 95 diseases.
- Dec 2015 - **Research Intern**, Xerox Research Centre, Bangalore, India.
- Jan 2016 Guide: [Dr. Koyel Mukherjee](#). [\[github\]](#)
- Developed a prototype of multimodal trip planning system that integrates dynamic ridesharing with scheduled transportation services.
 - Used *k-medoids* algorithm to find clusters of landmarks in road network graph. Implemented a variant of *hill climbing algorithm* & *silhouette analysis* to find the optimal number of clusters.
 - Lead to a 12x improvement in running time, using the formulated heuristics for computing all-pair road network distances.

Selected Projects

- Jun 2014 - **Android app named "Yes Mam !!"**.
- Dec 2014 [\[github\]](#)
- An intensive attendance tracker app to manage and plan holidays, bunks and academics. Involved extensive usage of SQLite Database and SharedPreferences for data persistence. Developed a sound understanding of various Android concepts like Activities, Fragments, Layouts, Intents, Widgets, Adapters, Cursors etc.
- Mar 2015 - **Wireless Packet Talker in C**.
- Apr 2015 [\[github\]](#)
- Developed an adaptive packet sniffer that changes channels on the basis of packet capture frequency. Served as proof of concept for distributing computational power over WiFi, in the calculation of mathematical expressions.
- Feb 2015 **Design and Implementation of SIC Disassembler in C++**.
- Disassembled object program for SIC architecture in two passes and generated corresponding Assembly file with appropriate labels, opcode and operands. [\[github\]](#)

Visit <https://github.com/sidak?tab=repositories> for a full and detailed list of projects.

Positions of Responsibility & Extra Curriculars

- Founder & Lead Organizer **Started the Machine Learning Reading Group (MLRG)** in IIT Roorkee, with the aim of bringing together people interested in ML, NLP & Vision to **discuss latest research** and key developments. (2016)
- Mentorship **Guided 10 first-year undergraduates** towards a holistic development by helping them adjust to the new environment, academically as well as socially. (2015)
- Mobile Development Besides, developing several Android applications as a member of Mobile Development Group (MDG), SDS Labs, fostered this interest among the students by **organizing lectures & writing blog posts**. (2013 - 2015)
- Writing & Designing As a member of Watch Out! News Agency, IIT Roorkee, **wrote articles to increase awareness** of students about the events in the campus and act as a medium of change. Also, designed advertisements, cartoon strips & publicity teasers. (2013 - Present)

Technical skills

- Languages** : C/C++, Python, Java, Haskell, Javascript, MATLAB, R, Node.js, Express, HTML, CSS
- Software Packages** :
 - ML*: Chainer, scikit-learn, Shogun, TensorFlow, Caffe, NLTK, Numpy, Scipy
 - Others*: SQL, MongoDB, Git, Android, L^AT_EX
- Operating Systems** : GNU/Linux, macOS, Windows