Operations in Web and Coding Club
April 1, 2018 - March 31, 2019

Managers:
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Conveners:
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Volunteers:
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< Just some of us walking in swag />

Events

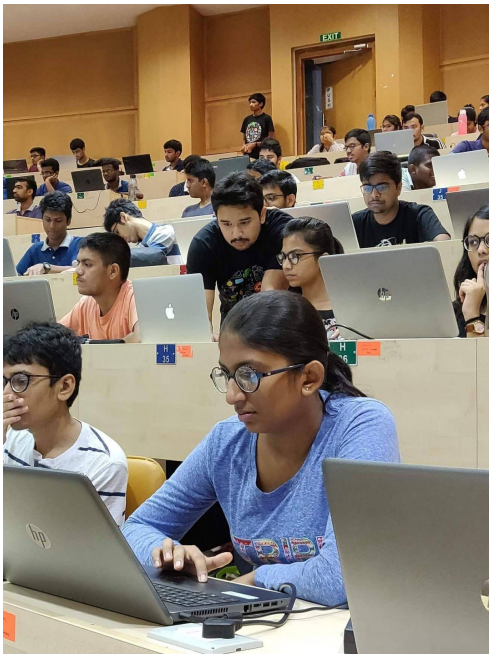
ITSP Bootcamps: A series of hands-on workshop conducted to help freshmen gained some basic skills needed to do their ITSP projects

1. Git & Github Bootcamp (30/05/2018): Students were taught the basics of version control systems along with the Git/Github knowledge they would need for working together on their ITSPs.
2. Android Application Development Bootcamp (01/06/2018): This was an hands on workshop where students were taught the basics of Android Studio and app development in general.
3. Python Bootcamp (04/06/2018): Students were taught some basic syntax and later on some libraries with hands-on coding were shown.
4. Introduction to Machine Learning Bootcamp (05/06/2018): Students were talk the basic concepts of Machine Learning and given project specific advice.

Scratch Day (04/08/2018):

The session kicked with an introductions of our club, where we introduced our club(activities, motto), talked about coding and introduced our plans for this semester. We told them about our resources like the wiki and InstiApp which would be useful for them throughout their stay in college.

An introductory workshop to coding which was targeted towards freshies. The attendees learned how to use Scratch. This was the first programming experience for many. At the end of the two days, we had them make a game of their own in teams of 3. It was their first hackathon experience. The entire LA was full in the beginning and by the end we had retained around 200 students. All the students were first years, including some PGs.



Introduction to Go Programming Language (16/08/2018):
This was an interactive workshop on the not so commonly known Go Programming Language. This was the first of a kind event conducted in collaboration with xLabs. The session started out with basic high-level differences between golang and other commonly used languages, like cpp or python in the first part. The second part was a hands-on session where the students wrote a basic program involving network requests using golang.

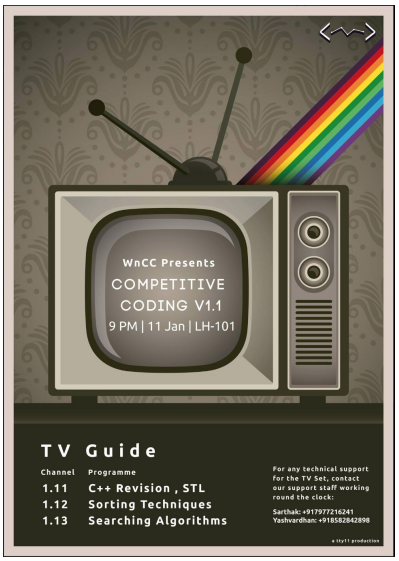
GSoC Incubation Cell:

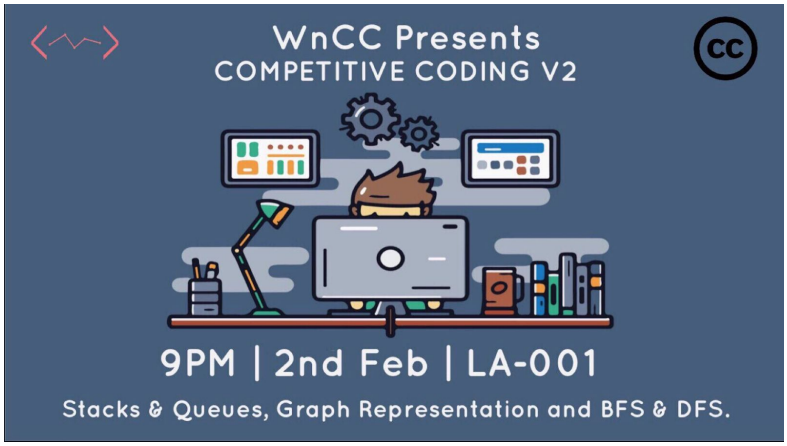
Conducted a number of events and made past GSoCers more approachable than ever. Encouraged freshmen and sophomore aspirants to send proposals, who wouldn't have done so otherwise. The events are as follows:

1. **Introduction To Open Source (20/08/2018):** The session introduced the students with the philosophy and idea of Open Source. How it works, how it's beneficial for all and how the students could contribute to it. We also spoke about some programs like Google Summer of Code and Outreachy and guided students in getting started with them. Towards the end we past years' GSoCers (including Nihal Singh, Meet Udeshi, Yashvardhan Didwania) speak about their GSoC experiences.
2. **Git + GitHub Weekend (22/09/2018 - 23/09/2018):** Git and Github are the most essential tools for anyone to wants to contribute to open source in anyway. This was a hands-on workshop for students. For the first time it was conducted back to back over a weekend to ensure retention of audience from the Git session. Simple git commands were explained on the first day, with a mention of little complex commands, followed by git-game . On the second day students were familiarised with UI of Github and made to solve a sample bug on our website.
3. **WnCCC - Web and Coding Casual Conversations (16/10/2018):** An informal event conducted in Tinkerer's lab. We spoke with students about the various ways in which they can contact Open Source organisations and start contributing to them. The turn-out was just right for very productive discussions.

ICPC Incubation Cell:
Conducted a series of sessions to promote the culture and participation of Competitive Coding in the institute. Formed a messenger group of interested students to ease knowledge sharing and team formation among them.

1. **Introduction to Competitive Coding (26/08/18):** The attendees learnt about what is Competitive Coding, how should one start and what are the helpful websites for it. The past ICPC participants shared their practice schedules and strategies to use in the 3-hour time frame.
2. **Competitive Workshop 1 (11/01/2019):** The attendees learnt about C++ Standard Template Library, Sorting and Binary Search. Problems related to the same and a hands on coding session followed. The turnout was more than expected. Almost entire audi was filled. The session was conceptualized and conducted entirely by our conveners.
3. **Competitive Workshop 2 (02/02/2019):** This workshop covered Graph related algorithms. In the first half, the students were taught algorithms and their code. Then, some problems related to the same topics were discussed and then time as given to students to write some code.





Reflections:
An informal series of events conducted in Hostel Lounges, where speakers discuss about their CS research projects conducted as RnD projects or internships.

1. **Chinmay Talegoankar (29/09/2018):** spoke about his intern at NVIDIA where he worked on optimizing Capsule Networks using CUDA, as to make the implementation more efficient in terms of speed as well as memory bandwidth usage. He spoke about capsule networks which is a deep learning architecture published by Hinton last December '17. It performs significantly better than CNNs for MNIST, and also overcomes the issue of losing spatial correlations in images due to max-pooling in CNNs using an algorithm known as dynamic routing, the only trade off being that this makes Capsule networks very slow as compared to CNNs.
2. **Chitwan Saharia (06/10/2018):** Allowing humans to interactively train artificial agents to understand language instructions is desirable for both practical and scientific reasons. No matter how advanced AI technology becomes, human users may want to customize their intelligent helpers to be able to better understand their desires and needs. Who wouldn't want one's Amazon Alexa to be more and more personalized according to one's requirements? We all want a Jarvis for ourselves, don't we? But the main question is : Are we there yet? As a part of his internship at MILA, Montreal, Chitwan Saharia worked on answering this question using a bunch of algorithms online as well as offline. The process led them to create a grid world environment as a suite to launch experiments, and interactively observe the agent learning instructions.
3. **Meet Udeshi (15/01/2019):** spoke about his DDP which focuses on looking at various security exploits using the hardware design of the processor and their mitigation. He discussed about side channels, cache hierarchy and ways to exploit it, recent attacks which have made the news, some software exploits like buffer overflow and stack smashing and how they can be prevented using hardware.

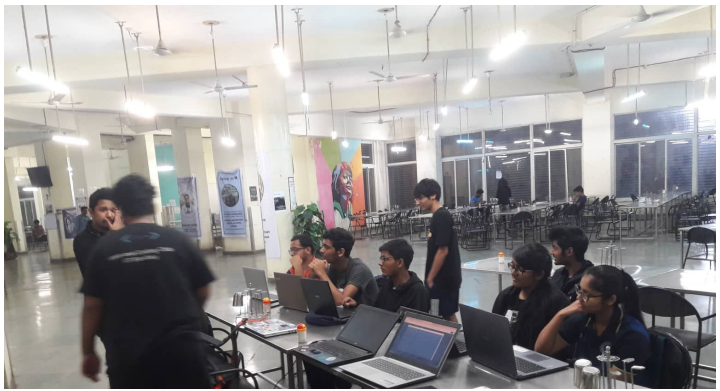
4. **Rohit Kumar Jena (14/02/2019):** spoke about his BTech thesis, where he explores some of the current Bayesian Deep Learning approaches to estimate uncertainty in the context of segmentation. He also formulated a Bayesian theoretic DNN that analytically accounts for uncertainty with predictions without using approximate methods like Variational inference or Monte Carlo simulations. I also propose simultaneous neural network calibration so that the outputs are true indicators of probabilities. This approach achieves state-of-the-art in calibration in semantic segmentation in 3 large medical datasets without compromising the quality of the predictions.
5. **Karan Taneja (09/03/2019):** covered ASR systems mainly consists of two trained parts: acoustic model and language model which are bridged by a lexicon. The main focus was on briefly explaining the working of a GMM-HMM and TDNN acoustic models for large vocabulary speech recognition. He also went over some basic language models which were followed by the details of his work.

6. **Nihal Singh (28/03/2019):** spoke about what testing means, why it matters and how does it help in writing good, clean and maintainable code. He hosted a discussion on testing, diving into the basics of what different types of tests mean, how easy it is to write tests, how testing can improve your workflow and save a lot of time. Also present a small tutorial on how to write tests for Python with a simple example. Finally, I would talk about his internship at Mercari, Japan explaining how to write tests for Android.

Web and Coding Casual Conversations (WnCCC):

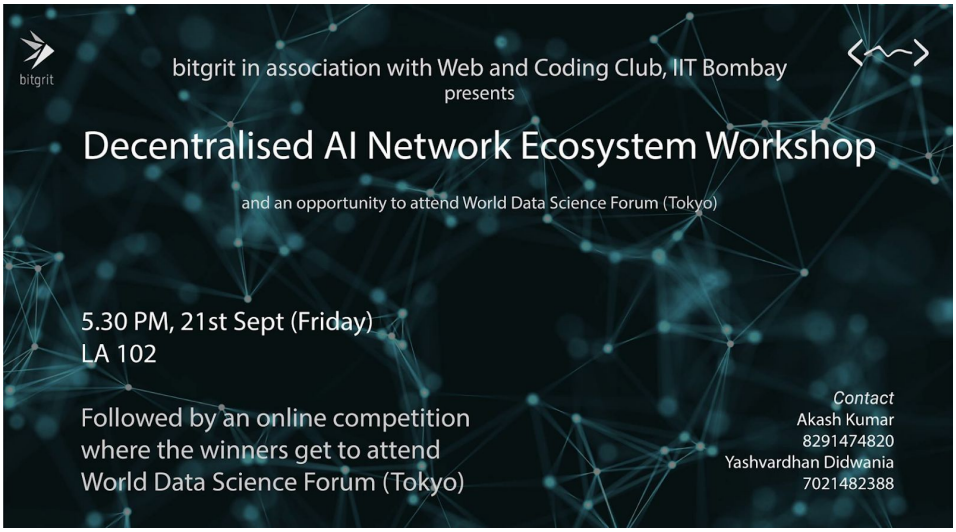
WnCCC is a small informal event normally conducted in hostel mess or Tinkerer's Laboratory. The event usually has a small 45 mins agenda after which it breaks into a informal discussion on random topics depending on the speaker and the audience.

1. **Introduction to APIs (27/01/2019):** The speakers spoke about the basic concepts of APIs Jsons and how to use APIs. They demonstrated simple code snippets using which API calls could be made. Various APIs like the weather API, the NEWS APIs, and our very own InstiApp APIs were demonstrated.
2. **Jekyll (06/02/2019):** An informal session on Jekyll, a simple, blog-aware, static site generator perfect for personal, project, or organization sites. The attendees learned everything about Jekyll right from its installation to using various templated to make beautiful websites very easily.



A Talk on “Global Threat Landscape” (30/08/2018):
This talk was the start of our collaboration with Crowdstrike. We had Amol Kulkarni, Chief Product Officer of Crowdstrike to talk about the trends and need of cloud security solutions. Students learned how current anti-virus software work and their limitations, and how aggressive silent monitoring of the system combined with processing on the cloud can detect threats much more efficiently.

Decentralized AI Network Ecosystem (21/09/2018):
Bitgrit is a Japan based company working on combining AI and blockchain to bring decentralization to AI. This was a talk by 3 experts from bitgrit who flew from Japan to deliver this workshop.The talk started with explaining how they have managed to create the platform and stretched to current industry uses of blockchain and how it is being applied to different fields. Some knowledge of blockchains was a prerequisite for this talk, but the active participation from the audience helped.

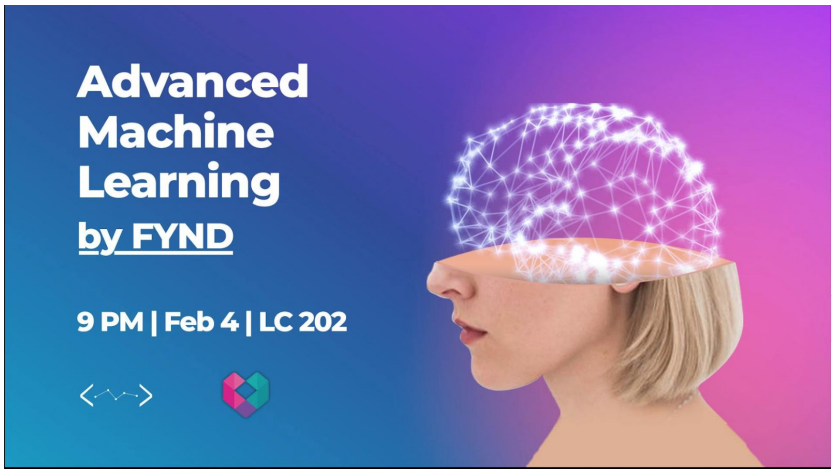


Blockchain 101 (28/09/2018):
The attendees learnt about what are decentralization and crypto-economics that serve as the backbone the technology underlying Bitcoin, Ethereum and much more. The talk was given by Tezan Sahu (WnCC Volunteer 2018-19) and Akash Kumar (WnCC Volunteer 2017-18). Both of them are very enthusiastic about getting more and more people interested in blockchain from the institute. Tezan prepared excellent and complete slides for the event, there was a lot of interaction between the speakers and the audience.

Natural Language Processing (12/10/2018):
The talk briefed about high-level Business Requirement. It also covered information about already available tools and technologies and how to other parameters should be taken into consideration while developing the solution – like performance (in terms of time and space complexity), volume of data, hard copy vs soft copy documents, handling of exceptions or failure in such large volume of data etc.

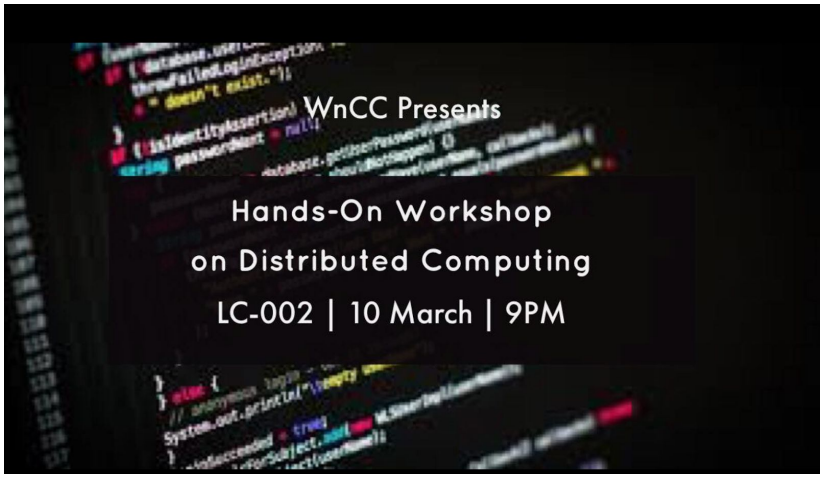
Building Decentralized Apps on Ethereum (12/01/2019):
Hands on introduction and coding on Blockchain. Targeted at all beginners in Blockchain irrespective of their year. This 2-day workshop was also open to students outside IIT Bombay.The attendees learnt about technologies that Blockchain are based upon. We partnered with Matic for this, who also conducted a hands on tutorial so that all attendees could build a DApp by the end.

Talk on Advanced Machine Learning (04/02/2019):
Fynd is an information arbitrage platform built on the real-time data stream of the store's inventory. They are the only company to have access to such data at this scale.
The talk explained the various ways and techniques in which the company uses machine learning in various products. They discussed the challenges faced in making those products and how the products were a success eventually.



Consensus 101 (07/03/2019):
This was a talk taken by one of our Volunteers on how consent and approval are achieved over a decentralized blockchain network. This is another event in the series of blockchain events organized by our blockchain circle. The talk started with revising some basic blockchain but quickly moving on to how consent and approval are achieved. Some knowledge of blockchains was a prerequisite for this talk, but the active participation from the audience helped.

Distributed Computing Workshop (10/03/2019):
A hands-on workshop on Distributed Computing. Problems were solved from the Distributed Google Code Jam which is the biggest yearly competition for distributed algorithm design problems. These problems are designed so that there is some inherent parallelism in the problem that can be exploited to run them faster on a cluster rather than a single computer. The attendees learned about various CC algorithms and how to run them on a cluster of machines. Many questions of inquisitive freshmen were answered by our convener.



Cloud Computing Workshop (16/03/2019):
This was a basic hands-on workshop on Cloud Computing conducted in collaboration with Nutanix. The company also went on to speak about ways in which they have implemented Cloud Computing. The speaker of the talk was Shamanth Kengeri. Shamanth has been with Nutanix for over 5 years now. His team manages the pre-prod data-centers for Nutanix's cloud services. The students had a great time interacting with him and clearing their queries.

Projects

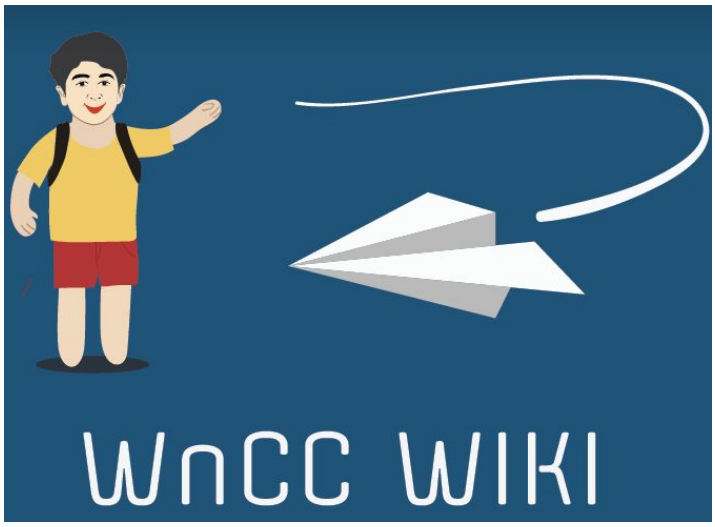
InstiApp: Oversaw the launch of InstiApp, the single most ambitious project undertaken by WnCC in a long time. The app currently has more than 5k downloads and our servers are kept busy with more than 14k hits each day. This has been possible only due to the enormous efforts of our lead developers, Varun Patil and Sajal Narang and their team of junior developers. Their continued involvement is invaluable for us. The new Complaints feature, developed in collaboration with NSS will soon be launched with full support for resolution by authorities. Meanwhile, the hugely desired iOS version of InstiApp is already in the works, being tested rigorously to ensure the best user experience.

Seasons of Code: Organized the WnCC Seasons of Code over Summer 2018 with 22 senior mentors. The program received a record 66 students and had 18 projects, the highest in the three editions. The stipends for the completed participants have already been procured. We intend to continue the program with the same rigour next year, extending the partnership with Jio.
https://www.wncc-iitb.org/soc/

Migration of Rpi Noticeboards to InstiApp: Already having secured support for the roll out of the noticeboards, we changed the implementation to make use of the already existing InstiApp infrastructure. Mayuresh ensured that the Rpi is remotely accessible to push updates. The Rpi Noticeboards are currently deployed in H9, H5, H2, and H8 and will soon be rolled out across the institute.

WnCC Newsletter: The weekly newsletter is posted on the WnCC Google Group every Sunday (51 in number till March 31, 2019). The newsletter consists of the week's activity in WnCC and the world of technology, along with a newly added section to include recent developments from other sections well. The newsletter will soon be made publicly available outside IIT Bombay by subscribing to it on our website.
https://groups.google.com/forum/#!forum/wncc_iitb

Grundy - the WnCC Wiki: New content was added to the wiki. The wiki was shifted to a new server for better maintenance leading to lower downtime. Conducted a online treasure hunt for the freshers batch of 2018 which led them to the wiki for clues. Heavily publicised the wiki throughout the year in all events.
http://wncc-iitb.org/wiki



Web Policy: This was the first year when WnCC maintained the entire online presence of the Institute Technical Council ensuring standardization. The new website launches of the Aeromodelling Club and Kriitika (Astronomy Club) were made possible by easy development pipelines introduced. Shifted all websites to a new server to ensure smooth handing over to the next Web team of ITC, which will work with WnCC in the next year to carry forward what we started.

Internship Portal: A platform to connect companies, startups and students looking for internships. The portal has 75 floated internships and 1158 registered students at the time of writing this report. We intend to roll out major upgrades to the portal in the next year.
https://portals.wncc-iitb.org/internships

ITSP: Mentored, managed and reviewed the Institute Technical Summer Projects . A total of 10 teams worked under WnCC, out of which 7 saw completion and demonstration of their projects. The projects spanned over several genres like Machine Learning, Game Development, and Image Processing.

Community Development

tty11: In succession to last year, this year we had tty11, a 20 member strong group of conveners and volunteers, working in cohesion to carry out our initiatives.

DevCom - The Developers' Community of IIT Bombay: A Developer's Community was formed to carry forward projects like InstiApp, RPi Noticeboards. Through a rigorous selection procedure, 7 freshmen were selected to be a part of this team. This team would actively work on the InstiApp, adding new features to it, solving the pre-existing bugs and also work on other useful projects like the RPi noticeboards. A proposal has been drafted for this community to take up projects from other bodies in the institute. This would, in the long term ensure quality development of software useful to the entire institute as well as a gradual reduction in the PoRs. The proposal was presented and approved in the latest SAC meeting in the presence of Director Prof. Devang Khakkar.

External Relations

Block Venture Coalition(CMU): WnCC is a part of BVC which is the largest alliance of BlockChain groups and VC firms. BVC is interested in organizing blockchain related events and hacathons with WnCC.
https://blockventurecoalition.com/

Crowdstrike: Interested in conducting a hackathon with us

Nutanix: Interested in conducting a hackathon with us.

Jio: Partnered with us to host the Coding Hackathon at the 7th Inter-IIT Meet. Continued collaboration with WnCC, organizing hackathons, floating funded projects in SoC, and conducting events, throughout next year.

ETHIndia: Publicised their first hackathon in IIT Bombay with the help of WnCC. Winners of the Lendroid track belonged to the WnCC Community.

Matic Network: Conducted a workshop with us. Interested in organizing similar workshops on Blockchain and Cryptocurrency.

bitgrit: Organized a workshop on Decentralized AI Ecosystem. Interested in organizing other similar events.
Microsoft: Conducted yet another edition of code.fun.do with WnCC. Interested in conducting similar hackathons.