INTERNSHIP APPLICATION FORM

**1 Basic Data**

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| Last name: | Jain |
| First name: | Sanil |
| Middle name(s): |  |
| Date of birth (dd/mm/yy): | 16/10/1994 |
| Nationality: | Indian |
| Gender: | Male |
| Civil status: | Single |
| Contact address: | Room no 145, Hall 3, IIT Kanpur, Kanpur -208016 |
| Email: | [sanilj@iitk.ac.in](mailto:sanilj@iitk.ac.in) |
| Homepage (if any): | <http://home.iitk.ac.in/~sanilj> |
| Name of institute: | IIT Kanpur |
| Area of study: | Computer Science and Engineering |
| Start date of study: | 31/07/2012 |
| Expected graduation date: | 06/06/2016 |
| Language(s): | English,Hindi |
| CGPA at the end of  4th/6th semester: | 10.0/10.0 |

**2 Areas of interest**

Please provide up to three general areas of interest and up to three specific EPFL laboratories and professors which you would prefer for your internship. All research groups and research staff are listed on the websites of the different schools under [www.epfl.ch](http://www.epfl.ch/).

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| **Areas of interest:** (max. 100 characters) | My primary area of interest is Machine Learning and Data Analysis. I also have significant interest in Artificial Intelligence and Game Theory. |

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| **Preferred EPFL laboratories** | Abbreviation of lab/research group | Preferred researcher of this lab/research group |  |  |
|  |  | Title (Prof./Dr.) | Initial(s) | Last name |
| **1)** | Human-Computer Interaction Group | Dr. | Pearl | Pu |
| **2)** | Artificial Intelligence Laboratory | Prof | Bio | Faltings |
| **3)** | Computer Vision | Prof | Pascal | Fua |

Additional remarks: I went through the projects in the above three labs and found them really interesting especially the projects regarding building recommendation systems and sentiment analysis. I aim to gain significant research through this internship and get a broader outlook on a research career in the field of my interest.

**3 Educational qualifications**

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| Academic institution (name, city, country) | Period (in years) | Degree(s) obtained | Areas of study | Grades |
| IIT Kanpur  Kanpur, U.P.  India | 2012-2016(expected) | B.Tech | Computer Science and Engineering | 10.0/10.0(in first four semesters). |
| S.M. Arya Public School, New Delhi | 2011-2012 | Class XII | Physics  Chemistry  Mathematics  English  Physical Education | 95.4% |
| P.M.S Public School, Moradabad | 2009-2010 | Class X | English  Science  Mathematics  Social Science  Sanskrit  Introductory IT | 10.0/10.0 |
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**4 Technical skills**

**Languages(proficient in) :-** C,C++,Python  
 **Languages(familiar with):-** C#,F#,Javascript,PHP  
 **Other tools/languages:-** Latex,HTML,XML,CSS,Octave,Matlab,Gnuplot,Bash,Shell scripting,Git,Oz,Perl,R,MIPS Assembly Language,Bluespec Verilog  
 **Platforms:-** Windows,Linux,Windows Phone,Android

**5 Projects and work experience**

**1. Intelligent Tutoring System for Introductory Programming Course (May14-Ongoing)** Research Project under Dr. Sumit Gulwani (Microsoft Research, Redmond) and Prof Amey Karkare( IIT Kanpur)  
i)Developed a system in C# which uses XML information to automatically generate programming problems, theirsolution code and their variations with the provision to add more problem types and templates.  
ii)Used Klee generated test cases for evaluation, generated partial progressions of simpler subproblems(based on the given problem) with the feature of revealing partial solution(multiple levels of partiality)for the problem in case of inability to solve.  
iii)System is being implemented in the present offering of ESC101 with 400+ students, the aim is to collect more data for analysis so as to recognize error patterns and come up with effective feedback mechanisms.

**2.Converting Natural Language to First Order Logic : Intelligent Tutoring Systems (Aug14-Ongoing)** Research Project under Dr. Sumit Gulwani (Microsoft Research, Redmond) and Prof Amey Karkare( IIT Kanpur)  
i)Worked on automatic translation of Natural Language sentences to FOL(First Order Logic), with the intention of building an Intelligent Tutoring System for the introductory logic course in most universities. (E.g :- By generating solutions,similar problems etc.)  
ii)Collected a large corpus of real world FOL textbook problems and from online courses, tagged them with thecorrect FOL and analyzed them for translation patterns. Designed metarules for the translation process.  
iii)Designed a system in F# which uses bijective metarules to achieve bidirectional translation and compared the accuracy with the gold standard FOL. Currently working on improving the efficiency and coverage of metarules.

**3.Tron Game** Summer Project under Programming Club, IIT Kanpur  
i)Developed a Tron Bot(based on the movie Tron), and employed minimax to develop an algorithm for the bot toplay against a human player  
ii)Used concepts like Voronoi’s Diagram and Flood Fill to develop heuristics for the minimax. Alpha Beta pruningwas used for a faster minimax.  
iii)The game was developed in python using packages like pygame and numpy.

**6 Achievements and awards**

1.**Department Rank 1** (among 100 students) and **Institute Rank 1** (among 837 students).

2.Received Academic Excellence Award for distinct academic performance in the year 2012-2013.

3.Achieved **All India Rank(AIR) of 214** among 0.5 million candidates in IIT-JEE.

4.Achieved **All India Rank(AIR) of 84** among 1 million candidates in AIEEE.

5.Present in **top 1% students** from India in CBSE class 12th Board Exams 2012.

6.Received **NTSE**(National Talent Seach Examination) scholarship, given to top 1000 students from the country.

7.Received **KVPY**(Kishore Vaigyanik Protasahan Yojana) scholarship, given to top 200 students from the country.

8.Qualified for **InPHO**(Indian National Physics Olympiad),**InCHO**(Indian National Chemistry Olympiad) and **InAO**(Indian National Astronomy Olympiad) in 2012(only 400 students from the country qualify for each exam ).

**7 Publications** (if any)

**8 Extra Curriculum Activities** 1. Achieved 2nd Position in El Eduvate at Techkriti 2014, the Annual Tech Festival of IIT Kanpur.  
 2.Achieved 19th Position(among Indians) in July Long Challenge, competitive programming competition organised by Codechef.  
 3.Received Honourable Mention in Yahoo HackU 2012.  
 4.Achieved 2nd position in FOSSDEV at Takneek, Annual Intra-IITK Tech Event, and were the only first years to participate.  
 5.Member of Alumni Contact Programme where we kept the alumni updates with the institute events and also generate funds for research purposes.  
 6. Participated in IIT Kanpur's attempt to break the Guiness World Record for the maximum people successfully solving the Rubik's cube together in Techkriti'13.

1. **For 4th year dual-degree students only**

Is the EPFL internship meant to constitute the first part of a subsequent MTech project work?

Yes No

If yes, please provide the contact details of your prospective MTech guide to be contacted by EPFL faculty:

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| Name: |  |
| E-mail: |  |

1. **References**

1. Dr. Amey Karkare, Assistant Professor, Department of Computer Science and Engineering, IIT Kanpur, Kanpur, India  
**Email :-** [karkare@cse.iitk.ac.in](mailto:karkare@cse.iitk.ac.in) ,[karkare@gmail.com](mailto:karkare@gmail.com)   
**Phone:-** +91-512-259-7520

2.Dr. Sumit Ganguly, Professor, Department of Computer Science and Engineering, IIT Kanpur, Kanpur, India.  
**Email :-** [sganguly@cse.iitk.ac.in](mailto:sganguly@cse.iitk.ac.in)  
**Phone :-** +91-512-259-8716,+91-512-259-7638

I certify that my statements in answer to the foregoing questions are true, complete and correct to the best of my knowledge and belief.

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| Name: Sanil Jain | Date: 17/10/2014 |