

NAME: BARNALI BASAK

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- Currently pursuing **PhD in Computer Science, IIT Bombay**, specialization in **Parallelization and High Performance Computing**.
- **Intern** at Compiler Group in **NVIDIA, Pune**, May-June, 2013.
- Worked as **Software Engineer** in **Qualcomm India Pvt. Ltd.** for 1.5 yrs in commercialisation of graphics driver on android mobile platform, operating on Linux OS.
- **Masters in Computer Science, IIT Kanpur**, 2011, specialization in **Program Analysis**.
- Presented Poster on **Dependence Analysis for Parallelization of Sequential Programs** in *Asian Symposium on Programming Languages and Systems (APLAS 2010)*, Shanghai, China, November 28 – December 1, 2010.
- Published Paper on **Heap Dependence Analysis for Sequential Programs** in *International Conference on Parallel Computing (ParCo 2011)*, Ghent, Belgium, August 30 - September 2, 2011.
- Strong academic background, PhD 9.63/10, M.Tech 8.67 / 10, B.Tech 8.89 / 10.

PHD RESEARCH:

Iterative Parallelization Using Transformation Guided Polyhedral Approach.

Under joint supervision of Prof. Uday Khedker and Prof. Supratim Biswas,
GCC Resource Centre Lab, Indian Institute of Technology Bombay.

Objectives:

- Collaborate advantages of classical loop transformations and polyhedral framework to get robust and precise iterative optimization approach.
- Extend polyhedral approach to handle loops with cyclic dependences and variable distance dependences.

PUBLICATIONS:

- **Heap Dependence Analysis for Sequential Programs**, Barnali Basak, Sandeep Dasgupta and Amey Karkare, *International Conference on Parallel Computing (ParCo 2011)*, Ghent, Belgium, August 30 - September 2, 2011.
- **Dependence Analysis for Parallelization of Sequential Programs** in *Asian Symposium on Programming Languages and Systems (APLAS 2010)*, Shanghai, China, November 28 – December 1, 2010.

PROFESSIONAL INFORMATION:

- Organization: Qualcomm India Pvt. Ltd.
- Experience with Employer: 1.5 yrs. (July, 2011 – December, 2012)

- Area of Work: Graphics Driver (Qualcomm provided latest GPU technology, end-to-end) on Android mobile framework, operating on Linux OS
- Role Performed: Customer support to commercialize product till end, internal support till the release of product, code review and fixing defects, development and commercialization of features requested by customer.

ACADEMIC QUALIFICATIONS:

Qualification	Stream	University / Board	Passing Year	Percentage / CPI
Doctors in Philosophy(PhD)	Computer Science & Engg	IIT, Bombay	-*	9.63 / 10
Master Degree(M.Tech)	Computer Science & Engg	IIT, Kanpur	2011	8.67 / 10
Bachelors Degree(B.Tech)	Computer Science & Engg	WBUT	2008	8.89 / 10
Board Examination (12 th)	Science	WBCHSE	2004	86.8%
Board Examination (10 th)	N.A	WBBSE	2002	87.88%

*Completed first year of PhD studies

M. TECH THESIS:

Heap Dependence Analysis for Sequential Programs

Under joint supervision of Prof. Amey Karkare, Prof. Sanjeev K Aggarwal, Department of Computer Science, Indian Institute of Technology Kanpur.

Objectives:

- Dependence analysis of sequential programs in presence of heap data structure
- Accurately parallelization of programs supporting heap data structure would be possible.

PROJECTS UNDERTAKEN:

1. Extending LFCPA to add must undef analysis in GCC.

(Project Supervisor: Prof. Uday Khedker, IIT Bombay)

Objectives:

- Adding a new analysis as dynamic plugin.
- Understanding GCC internals.

2. Simulation of Simple and Pipelined Processor using Verilog HDL and Study the Speedup Achieved (Project Supervisor: Prof. Ajay Jain, IIT Kanpur)

Objectives:

- To be familiar with Verilog HDL
- Simulate simple and pipelined processor and study the speedup.

3. Extending GDFP Patch and Adding GCC Pass for Detecting Loops

(Project Supervisor: Prof. Sanjeev K Aggarwal, IIT Kanpur)

Objectives:

- Extended GDFA patch to compute dominator information using bit vector framework.
- Added a new pass in GCC which detect reducible loops in a program.

4. Disambiguating Ambiguous Named Entity of Persons in Bengali

(Project Supervisor: Prof. R.M.K. Sinha, IIT Kanpur)

Objectives:

- Lexical items having semantic attributes are used as names in almost all Indian languages.
- Disambiguation of such ambiguous names given out of context is done.
- Conditional Random Field based machine learning tool is used for this classification.

4. Automatic Part-of-Speech Tagging for Bengali with Conditional Random Field

(Project Supervisor: Prof. Sudeshna Sarkar, IIT Kharagpur)

Objectives:

- Part-of-Speech (POS) tagging is a technique for automatic annotation of lexical categories
- Statistically developed a model which annotates words automatically

POSITIONS WITH RESPONSIBILITY:

- Teaching Assistant at IIT Bombay for CS101 : Computer Programming and Utilization (July-13 to Dec-13)
- Teaching Assistant at IIT Bombay for CS306 : Implementation of Programming Languages (Jan-13 to April-13)
- Teaching Assistant at IIT Kanpur for CS653 : Functional Programming course (Jul- 10 to Nov-10)
- Teaching Assistant at IIT Kanpur for ESC101 : Fundamentals of Computing course (Jul-09 to Nov-09, Dec-09 to April-10)
- Member of the Counselling Service and Link Student for the M.Sc. Maths 2010 batch, IIT Kanpur
- Worked as project associate in Media Lab Asia, IIT Kharagpur from Jul-08 to Sept-08

PERSONAL PROFILE:

Current Location : Bombay
Passport Number : H0324168
Languages Known : English, Hindi, Bengali
Marital Status : Married
Date of Birth : 24 – April – 1986
Hobbies and Interests : Making handicrafts, listening music, cooking

I hereby declare personally all the information mentioned above is correct up to my best conscience.

Barnali Basak