Amit Kumar Dhar

Curriculum Vitae

Date of Birth 22nd April 1988, Kolkata
Nationality Indian

Experience

Since 2015 **Assistant Professor**, INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, AL-
LAHABAD.
Information Technology department.

2014–2015 **Post doctoral researcher**, UNIVERSITÉ LIBRE DE BRUXELLES.
Formal Methods and Verification group, in the European project CASSTING, about
Collective Adaptive Systems Synthesis with Non-Zero-Sum Games.
I worked on automatic synthesis of controller for optimal scheduling and exchange of energy
in a collection of houses with solar panels. We utilized game theoretic technique to find
Nash Equillibrium with multiple players and different objectives. I also worked on synthesis
of controller for realizing a specification in temporal logics.

Education

2011–2014 **Doctoral Student**, LIAFA, UNIVERSITÉ PARIS DIDEROT - PARIS 7.
Title: Algorithms for Model-Checking Flat Counter Systems
Directors : Stéphane Demri and Arnaud Sangnier, Mention : Very Honourable.
I worked on algorithms for model-checking logics with varying expressivity and succinctness
over flat counter systems. I proposed algorithms with optimal complexity bounds utilizing
SMT solvers for better performing algorithms. I also implemented the algorithms in a
prototype.

2010–2011 **Masters**, ÉCOLE NORMALE SUPÉRIEURE DE CACHAN, FRANCE.
M2 in Informatique at Master Parisien de Recherche en Informatique (MPRI), with
Distinction .

2008–2010 **Masters**, CHENNAI MATHEMATICAL INSTITUTE, INDIA.
Masters in Computer Science, CGPA – 9.29 (First Class).

2005–2008 **Bachelor**, UNIVERSITY OF CALCUTTA, INDIA.
Bachelor in Computer Science, First Class Honours.

Research Interests

- Automated Computer Aided Verification
- Formal Methods
- Model Checking
- Temporal Logics
- SMT Solvers
- Game Theory

Publications

International Journals

2015   S. Demri, A. K. Dhar, A. Sangnier, **Taming Past LTL and Flat Counter Systems**, *Information & Computation*, Volume 242, 306-339

International Conferences with selection Committee

2014   S. Demri, A. K. Dhar, A. Sangnier, **Equivalence Between Model-checking Flat Counter Systems and Presburger Arithmetic**, *8th International Workshop on Reachability Problems (RP), 2014*

2013   S. Demri, A. K. Dhar, A. Sangnier, **On the Complexity of Verifying Regular Properties on Flat Counter Systems**, *40th International Colloquium on Automata, Languages and Programming (ICALP), 2013*

2012   S. Demri, A. K. Dhar, A. Sangnier, **Taming Past LTL and Flat Counter Systems**, *The 6th International Joint Conference on Automated Reasoning (IJCAR), 2012*

Thesis and Internship Reports

2014   **Algorithms for Model-checking Flat Counter Systems**, *Doctoral Thesis, LIAFA, Université Paris Diderot, 2014.*

2012   **Counter Systems with Presburger-definable Reachability Sets : Decidability and Complexity**, *Rapport de Master, Master Parisien de Recherche en Informatique, September 2012.*

Research Internships

2014   **Visiting Student**, (2 months) at NEW YORK UNIVERSITY.
Working at CVC4 group for the implementation of a verification prototype utilizing CVC4.

2011   **Masters Internship**, (5 months) at ÉCOLE NORMALE SUPÉRIEURE DE CACHAN.
Guided by Stéphane Demri and Arnaud Sangnier.
"Complexity of Model Checking Flat Counter Systems"

2010   **Masters Internship**, (4 months) at CHENNAI MATHEMATICAL INSTITUTE, INDIA.
Guided by K Narayan Kumar.
"Automata over infinite alphabet and infinite states"

Scholarships and Grants

2008   **Student Scholarship**, from Chennai Mathematical Institute.
Obtained a performance based scholarship for the entire duration of Masters course (2 years).

2010   **International Student Scholarship**, from Ecole Normale Superieure de Cachan, France.
Obtained full scholarship for pursuing Masters.

2013   **Research and Travel Grant**, from Foundation Sciences Mathematique de Paris, France.
Obtained research and travel grant for visiting New York University.

Miscellaneous

Participation I participated in international conferences like FOSSACS 2012, IJCAR 2012, ICALP 2013. I also participated in the following workshops MoVeP 2012, DigiCosme Winter School 2012 and GT-VERIF 2013.

Talks I have presented my research work in the following places: IJCAR 2012, MoVeP 2012, ICALP 2013, AVM 2014 as well as at GT-VERIF 2013, INFINI group seminar at LSV, ENS Cachan, at ULB, Belgium, at Uppsala, Sweden and at Verification group seminars at LIAFA.

Reviews I have also reviewed papers for conference like LICS 2013, Concur 2013.

Skills

Programming C, C++, python, haskell, Shell Scripting, LaTeX

Web html, php, MySQL, Ajax

Languages English (Advanced), Bengali (MotherToungue), French (Intermediate)

References

- **Gilles Geeraerts**
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  Office 2N8.117, Boulevard du Triomphe - CP212,
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  Phone : +32 2 650 55 96
  Relation : Post-Doc Advisor

- **Stéphane Demri**
  E-mail : demri@lsv.ens-cachan.fr
  LSV, CNRS & ENS de Cachan
  61, avenue du Président Wilson
  94235 CACHAN Cedex, France
  Phone : +33 1 47 40 75 46
  Relation : PhD Advisor

- **Arnaud Sangnier**
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  Case 7014, Bâtiment Sophie Germain
  75205 Paris Cedex 13, France
  Phone : +33 1 57 27 92 41
  Relation : PhD Advisor