Curriculum Vitæ

Thanos Tsouanas

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▶ Personal details

full name:	Athanasios (Thanos) Tsouanas
date of birth:	22/02/1983
place of birth:	Athens, Greece
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personal website:	http://www.tsouanas.org/

Spoken languages

Greek (native), English (proficient), Brazilian Portuguese (fluent), French (intermediate).

▶ Studies & academic positions

2007 Bachelor's degree from the Department of Mathematics of the University of Athens, direction of pure mathematics, "excellent" degree (8.51/10).

2010 Master of Science degree from MPLA (graduate program in Logic, Algorithms and Computation of the University of Athens and of the Technical University of Athens),[1] grade 8.23/10.

2014 PhD from École Normale Supérieure de Lyon, under the supervision of Olivier Laurent.[2] I was employed by CNRS under the Marie Curie fellowship "MALOA", and had a 1-month secondment[3] split between the University of Oxford (in the team of Luke Ong[4]) and École Polytechnique (in the team of Dale Miller[5]). **Thesis title: On the Semantics of Disjunctive Logic Programs**[6]

2015– Postdoctoral researcher in Universidade Federal do Rio Grande do Norte (UFRN), Brazil.

Seminars and schools

- **Summer School of Mathematics** University of Crete & FORTH (2004)
- **Midlands Graduate School** in the Foundations of Computer Science: Birmingham, UK (2008)[7]
- **MALOA training workshop** Fischbachau, Germany (2010); Leeds & Oxford, UK (2011 & 2012)
- **EPIT-GAMES** spring school on language theory, games & applications: Carcans, France (2011)[8]
- **MAP** international spring school on Formalization of Mathematics: INRIA, Sophia–Antipolis (2012)[9]
- **LICS** pre-conference tutorial day on *term rewriting systems*: Dubrovnik, Croatia (2012)
- **ISR2012** 6th International School on Rewriting. Valencia, Spain (2012)[10]
- **Logoi** school on Linear Logic and Geometry of Interaction. Torino, Italy (2013)[11]

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[1] http://mpla.math.uoa.gr/
[2] http://perso.ens-lyon.fr/olivier.laurent/
[3] As dictated by MALOA, I must undertake a secondment position under a different university-partner of MALOA.
[4] http://www.cs.ox.ac.uk/people/luke.ong/
[5] http://www.lix.polytechnique.fr/~dale/
[6] Both my thesis and the slides from my defense are available on my website.
[7] http://www.cs.nott.ac.uk/MGS/
[8] http://games-epit.labri.fr/
[9] http://www-sop.inria.fr/manifestations/MapSpringSchool/
[10] http://users.dsic.upv.es/~isr2012/
[11] http://www.logoi.fr/

▶ Research & academic activities

For the most part of my PhD studies, I was working on game semantics and logic programming. Firstly I extended the game semantics of LP[12] to cover finite propositional *disjunctive* logic programs. Next, I showed how to deal with *infinite* propositional DLP: an important step, since it allows one to give a semantics to first-order disjunctive logic programs. My paper with these results was published in 2013 (see below) and you can find it online on my website, together with slides from a related talk. By finding connections between these games and the Hyland–Ong games used in functional programming one could provide a semantical link between the two programming paradigms through games. The formalization and overall development of the DLP games was made with this goal in mind.

I defined an abstract semantic framework for denotational semantics of logic programs, and a semantic operator which transforms any given semantics of a non-disjunctive language to a new semantics, of the equivalent disjunctive language. I used this operator to obtain a novel game semantics for DLPN.

I am currently investigating how these results can be applied in higher-order logic programming and the underlying proof theory.

Research interests: semantics of programming languages, proof theory, set theory, order theory.

Journal publications

- Thanos Tsouanas, **A game semantics for disjunctive logic programming**[13]
  Annals of Pure and Applied Logic, Elsevier, 2013.

Articles in preparation

- Thanos Tsouanas, **An abstract semantic framework for logic programming**
- Thanos Tsouanas, **An encoding of disjunctive logic programs to non-disjunctive ones**

Talks

- **Game semantics for logic programming:**
  - MALOA 2010 training workshop: Fischbachau, Germany.
- **A game semantics approach for finite, propositional disjunctive logic programs:**
  - GaLoP VI (Games for Logic and Programming Languages): Saarbrücken, Germany.[14]
  - LAC–GeoCal 2011: École Polytechnique, Paris, France.
  - MALOA 2011 training workshop: Leeds, UK.
  - PL Seminar NTUA/IEEE-GR 2011 seminar: Athens, Greece.
- **A game semantics for disjunctive logic programs:**
  - University of Oxford (May 2012)
  - University of Bath (Sep 2012)
  - LIX, École Polytechnique, Paris (Jan 2013)
  - UFMG, Belo Horizonte, Brazil (Mar 2014)
- **On the semantics of disjunctive logic programs:**
  - Demokritos Research Center, Athens, Greece (Jan 2015)
  - UFRN, Natal, Brazil (Mar 2015)

Participation in conferences & scientific events

- **Réalisabilité à Chambéry 2011**.
- **ETAPS 2011** Saarbrücken, Germany.
- **LI2012** (Logic and Interactions), CIRM, Marseille, France.
- **CHoCoLa** (Curry–Howard: Logic and Computation), monthly seminar in Lyon, France.
- **LICS2012**, (Logic in Computer Science) June 25–28, 2012, Dubrovnik, Croatia.
- **GaLoP VII**, June 29, 2012, Dubrovnik, Croatia.

[12] (D)LP(N) stands for (Disjunctive) Logic Programming (with Negation).
[13] http://www.tsouanas.org/docs/tsouanas-dlpgames.pdf
[14] http://www.gamesemantics.org/

▶ Distinctions & awards

Mathematics. Two scholarships for excellence in studies and for *highest marks* for the year 2002–2003 at the Mathematics Department of the University of Athens, from the National Foundation IKY.

Music composition. Best original soundtrack composition prize for the computer game Hero Quest 6.[15]

Web development. Second prize on a panhellenic web development contest of Amstel (in 1996).

▶ Computer skills

I develop open source software, web applications, libraries and scripts, about which you can find more information on my website. I also administer servers with multiple users, who rely on them for their email, web hosting, proxies, file storage, databases, backups, etc.

Computer languages

- Haskell, Ruby, Python, C, Java, Prolog
- HTML, CSS, CoffeeScript/JavaScript/jQuery
- SQL, Django, Sinatra, Ruby on Rails, Scotty, web.py
- Shell scripting & Unix programming
- TEX & LATEX

Operating Systems

Over 16 years of experience in the **BSD Unix** operating systems, especially in **OpenBSD**. I am also experienced in other Unix-like systems, including various distributions of **Linux**.

System & network administration

- **web servers** (nginx, Lighttpd, Apache),
- **mail servers** (OpenSMTPD, Postfix, qmail),
- **file servers** (FTP, Samba, NFS),
- **domain name servers** (named),
- **firewalls & routers** (PF packet filter).

Web development & databases

I am a seasoned web developer (began with the first version of HTML in 1995), using **HTML5**, **CSS**, and **jQuery/CoffeeScript** for web design and **Ruby**, **Python**, and **Haskell** (usually with web frameworks such as **Sinatra**, **Django**, **Ruby on Rails**, **web.py**, **Snap**, etc.) for web development and interaction with databases.[16] I have a good command of **SQL** and of the relational database management systems **PostgreSQL** and **SQLite**.

Audio & graphics

More than 18 years of experience in **MIDI sequencing** and audio recording, using audio software applications such as **Reaper**, **Cubase**, **Audacity** and **Ozone iZotope**, for composing, recording and editing music and audio in general. Good level of the image creation and editing application **GIMP**, for designing and editing graphics for websites, programs, covers, etc.

▶ Music

I have been composing, arranging, orchestrating and performing music since 1996. I enjoy mixing, mastering, recording, and producing music. You can find more information and music samples on my music website[17] and on Spotify.[18] I play (my skill varying from awful to intermediate) the following musical instruments, among others: piano, baroque recorders, guitar, glockenspiel, ocarina, laouto, and mandolin.

[15] http://the.thanos.band/fairies/
[16] Many years ago, I used to code in PHP, ColdFusion, ASP, JSP, and pure CGIs, but luckily these days are over.
[17] http://the.thanos.band/
[18] http://www.spotify.com/

▶ Working experience

Here are some of the jobs I have had along with a short description of my duties.

UFRN (2015–) Postdoctoral researcher in the department of mathematics of UFRN, Brazil.

CNRS (2010–2014) Employed as a researcher to complete my PhD studies in mathematical logic under the Marie Curie fellowship "MALOA".

Alpha News 98,7 FM (1999–2001) I was the web developer & designer for the radio station's website. I designed a new website from scratch; and developed the content management system (in PHP & Oracle) to be used by reporters. I provided constant (24/7) support and trained the reporters who had zero to light computer experience, to use my web application.

Springer Verlag Publishing (2005, 2009, 2010)

- Proof-reading of Y. N. Moschovakis's book *Notes on Set Theory*, 2nd edition.
- Proof-reading of M. Chlouveraki's book *Blocks and Families for Cyclotomic Hecke Algebras*.
- Typesetting, diagram design and indexing for the greek translation of S. Lang's *Algebra*.

Nefeli Publishing (2007, 2009)

- Translation into greek, editing, proof-reading and typesetting in LaTeX, of Y. N. Moschovakis's book Notes on Set Theory, 2nd edition.
- Typesetting of a collective volume of articles on logic, edited by D. Anapolitanos.

MPLA graduate program, University of Athens (2007–2010) Setup and system administration of the main server (OpenBSD) for the postgraduate program MPLA. Web development and design of the (still running) website of MPLA,[19] for which I developed my university-targeted framework **schole**, mostly written in Django, with PostgreSQL & SQLite database backends.

Mathematics Department, University of Athens (2002–2009)

- Preparation and teaching of mini-courses and seminars (see the next section for details).
- Technical support for the 4th Computability in Europe conference, CiE2008.
- Computer labs assistant (2002–2003) doing Unix system administration and web development.

School of Civil Engineering, NTUA (2009) Web development and design of the school's website.[20] System administrator of the department's main server (OpenBSD).

Zermelo Hosting Services (2002–2008) System administrator (OpenBSD) of servers (dns, web, mail, database), tech support for my hosting and web development/design customers, with 0 downtime and neither security nor performance issues.

1st high school of Kessariani, Athens (2004–2005) Technical support for five educational programs for high school teachers, organized by the Greek Ministry of Education. System administration of Windows 2000 Server and Red Hat Linux machines, as well as instructor for some of the lectures.

Hellenic Mathematical Society (2005) Assistant in the organization of the 9th Junior Balkan Mathematical Olympiad, Veria, June 2005.

Freelance programmer developing software and web applications for individuals and companies.

Tutoring of university students, both private lessons and group classes (see the next section for details).

Hero6 (2003) Honorary member of the development team of *Hero Quest 6* as an original music composer.

[19] http://mpla.math.uoa.gr/
[20] http://www.civil.ntua.gr/

▶ Teaching experience

Tutorials & seminars

These are tutorials and seminars that I have prepared and taught, during the years of my studies in Athens. Most of the lectures took place in the computer lab of the department, in which the attendants (mostly university students and professors) had immediate access to computers for practicing.

Introduction to functional programming with Haskell (2009)
Duration: 6 weeks, 2 hours/week; attendants: 30

Since the audience was "mathematically mature" (students and professors of mathematics), the approach was theoretical as well as practical: introduction to λ-calculus, types, typeclasses, recursion, higher-order functions, evaluation strategies, I/O, presentation of the early source code of xmonad.[21]

TEX & LATEX: How to correctly typeset beautiful texts (2006)
Duration: 3 lectures, 2 hours each; attendants: 40

The focus was on correct (semantical) typesetting for mathematical texts, a presentation of relevant LaTeX packages and some elementary programming in TeX.

Open-source: Unix, LATEX and programming with Python (2005)
Duration: one semester, 2 hours/week; attendants: 40

The basics of Unix and its philosphy, shell, filters, permissions, scripting, editing and text processing with Vim. Typesetting with LaTeX, introduction to Python: writing scripts, imperative and object-oriented programming, using libraries.

Server-side and client-side programming: PHP & JavaScript (2004)
Duration: 6 weeks, 2 hours/week; attendants: 30

A simple web blog application was built along the lectures, to demonstrate the basic principles of web programming, concluding with with a lecture on basic SQL and database interaction.

Website design with pure, clean and valid HTML (2003)
Duration: 6 weeks, 2 hours/week; attendants: 80

A tutorial on coding in HTML and CSS, also covering basic principles of how the World Wide Web operates and the HTTP protocol. By the end of it, the attendants were using FTP to maintain their personal websites on the department's web server.

Private lessons & small-group classes

I have given private lessons and small-group classes to students who were having difficulties, or who were preparing for exams for the following undergraduate courses:

Introduction to Computer Science. Standard entry-level course on programming, using either Python or C: I/O, Variables, arithmetic and boolean operators, control flow (branching & loops), arrays, and functions. Basic algorithms for sorting, searching, etc.

Object-oriented programming. Basic principles of OOP: objects and classes, information hiding, inheritance, interfaces, polymorphism, etc. These courses used either Java or Python.

Functional programming with Haskell. Types, type classes, higher-order functions, working with lists, list comprehension, recursive functions and data types, I/O. I use Bird's book, LYAH[22] and RWH.[23]

Calculus I & II. Standard first-year courses of Calculus: real functions, limits, sequences, series, derivatives, integrals. For these I used Spivak's and Apostol's Calculus books extensively.

Real Analysis. Metrics and norms, opened and closed sets, continuity, connectedness, completeness and compactness. For these I used Simmons's Topology book and Carothers's Real Analysis book.

Introduction to set theory and mathematical logic. Countable and uncountable sets, axioms of ZFC, propositional and predicate calculus, completeness theorems of Gödel.

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[21] http://www.xmonad.org/
[22] http://www.learnyouahaskell.com/
[23] http://book.realworldhaskell.org/