Samar Rahmouni

Education

September 2023 - Now
Master en Rercherche Informatique; Ecole Polytechnique, Paris
- Projet M1 on Graphical Algebra and its applications to Category Theory, implementation in Agda (Advised by Samuel Mimram)
- Stage M1 with Partout on an implementation of proof search for Pomset and BV logic (Advised by Lutz Straßburger)
- Stage M2 with Partout on a coq proof of the decidability of IS4 (Advised by Lutz Straßburger)

August 2018 - January 2023
B.S., Computer Science; Carnegie Mellon University
- Honors Thesis: Domain Informed Oracle for Reinforcement Learning
Advised by Giselle Reis, Gianni Di Caro and Eduardo Feo Flushing
- Concentration in Programming Languages

June 2018
Tunisian baccalaureate; Bourguiba lycée pilote
Mention très bien

Experience

April 2024 - August 2024 **Stagiaire M1 @ Partout - INRIA Saclay**

Implemented proof search for Pomset and BV logic, as part of the effort to have a useful tool for researchers. In the process of both verifying the correctness of the prover and choosing heuristics to optimize the search.

August 2023 - January 2024 **Course Assistant for Constructive Logic (15-317) and Artificial Inteligence (15-281) @ CMU Qatar**

Provided 1-1 tutoring to provide students with weekly helped, made autograders for the programming sections of the homeworks, wrote guidelines and reviewed midterms and assignments.

August 2022 - December 2022 **Teaching Assistant for Software Foundations of Security and Privacy (15-316) @ CMU Pittsburgh and Qatar**

Proctored examinations, met weekly with the teaching staff to better adapt grading and wordings. In Qatar, I wrote the homework solutions for future iterations of the course.

February 2019 - January 2020 **Undergraduate Research Assistant @ CMU Qatar** Funded by Giselle Reis.

Implemented a theorem prover for classical and constructive logic where the underlying types are objects. The prover was later automated for classical by making use of G3CP invertible rules. The project has an easy-to-use graphical interface to be used by students learning about logic.

May 2019 - August 2019 **Java Instructor @ CMU Africa**

Taugh Computer Science teachers basics of Java, by designing 2-week curriculum. Met with President Paul Kagame to discuss the future of education in Rwanda. The project was done by closely working with CMU Pittsburgh and CMU Africa.

Research Experience

Proof Search in Pomset and BV logic (April 2024 - August 2024) Advised by Lutz Straßburger

- Implementation was done in Ocaml while making use of the 'Logical' tool for the proof search of BV, specifically.
- Proof search in Pomset was implemented as the search of cycles on graphs: restricted to balanced formulas
- The implementation in Pomset was used as a benchmark for testing the proof search on BV
- **(www.)**

Proof Assistant for Categories encoded in an Equational Graphical Language (September 2023 - January 2024) Advised by Samuel Mimram

- Link between equational and graphical structures.
- Transforming the categorical definition of a terminal object to an equational definition using the work done by Albert Burroni.

- Defined the relevant type system and its rules for terms, contexts and equalities

Domain Informed Oracle for Reinforcement Learning (dio): (September 2021 - December 2022) Advised by Giselle Reis, Gianni Di Caro and Eduardo Feo Flushing

- Implemented a domain-informed module in ProgLog to guide the reward shaping of a Reinforcement Learning (RL) module
- Independently gathered related work to better identify the problem of reward shaping in RL and investigate possible solutions
- Adapted a deep-learning architecture to include a logic module, the model was formalized accordingly
- **www.**

Behavioral Modulation of a Reinforcement Learning Controller using Artificial Emotions (May 2020 - September 2020) Advised by Gianni Di Caro - Funded by QSIURP (Qatar Student Initiated Undergraduate Research Program) 2021

- Formalized and Implemented a survival game scenario based on predators and preys.
- Action is determined by behavior and decision in the environment.
- Experimenting on outcomes of behavioral modulations and its learned effects on decisions.

Proof Search and Certificates for Evidential Transactions (December 2020 - February 2021) Vivek Nigam, Giselle Reis, Samar Rahmouni and Harald Ruess, **CADE28**

- Provided a logical framework for distributed evidential transactions
- Compiled relevant related work

- Proved cut-elimination for the logic (interesting proof found in annex of the paper)
- **(www.)**

Academics

I love meeting people. You might have seen me at:

- OurCS conference in CMU Pittsburgh in 2018
- CADE28 in 2021
- POPL21 - Student scholarship and mentor/mentee program
- SPLASH21 - Student scholarship
- Differential Lambda Calculus @ CIRM Marseille 2024
- PLDI23 - Student scholarship

Leadership

- **Dungeons & Dragons club (2019)** - Founder and President
- **Volunteer Refugee Camp in Greece** - Documentary cameraman
- **Project Rwanda Leader** - Teaching volunteer
- **IMPAQT** - Student exchange program between CMU-P and CMU-Q

Contact me @ samar.rahmouni@outlook.com • 25 years old living in Paris, France

I speak french, arabic and english.

Carnegie Mellon University

Student Name: Samar Rahmouni

Birth Date/Month: 12-Oct

Date Awarded	Degree Awarded
Dec 21, 2022	Bachelor of Science in Computer Science with a minor in SCS Concentration in Principles of Programming Languages

Beginning of Undergraduate Record

Fall 2018

Dean's List

DPT	CRS #	COURSE TITLE	UNITS	FINAL GRADE	QUALITY POINTS
CS	15112	FNDMTLS OF PGMG & CS	12.0	A	48.0
CS	15129	FRESHMN IMMIGRTN II	3.0	P	0.0
MSC	21120	DIFFERENTIAL INT CAL	10.0	A	40.0
MSC	21127	CONCEPTS OF MATHMTCS	10.0	A	40.0
ENG	76100	READ WRITE ACAD CNTX	9.0	B	27.0
CMU	99101	CMPTNG CARNEGIE MELL	3.0	P	0.0

	UNITS PASSED	UNITS FACTORED	FINAL QPA	TOTAL POINTS
Semester	**47.0**	**41.0**	**3.78**	**155.0**
Cumulative	**47.0**	**41.0**	**3.78**	**155.0**

Spring 2019

DPT	CRS #	COURSE TITLE	UNITS	FINAL GRADE	QUALITY POINTS
CS	15122	PRIN IMPRTV COMPTATN	10.0	A	40.0
CS	15251	GRT IDEAS THERTCL CS	12.0	D	12.0
CS	15390	ENTREPRENEURSHIP CS	9.0	B	27.0
MSC	21122	INTEGRTN & APPROX	10.0	R	0.0
ENG	76101	INTERPRETN & ARGMNT	9.0	W	0.0

	UNITS PASSED	UNITS FACTORED	FINAL QPA	TOTAL POINTS
Semester	**31.0**	**41.0**	**1.93**	**79.0**
Cumulative	**78.0**	**82.0**	**2.85**	**234.0**

Fall 2019

Dean's List

DPT	CRS #	COURSE TITLE	UNITS	FINAL GRADE	QUALITY POINTS
CS	15150	PRIN FNCTIONL PRGMMG	10.0	A	40.0
CS	15213	INTR CMPUTER SYSTEMS	12.0	A	48.0
MSC	21241	MATRC & LINR TRNSF	10.0	A	40.0
BUS	70100	FOR BA MAJORS	9.0	B	27.0
PSY	85221	PRINC CHILD DVLPMNT	9.0	A	36.0

	UNITS PASSED	UNITS FACTORED	FINAL QPA	TOTAL POINTS
Semester	**50.0**	**50.0**	**3.82**	**191.0**
Cumulative	**128.0**	**132.0**	**3.22**	**425.0**

Spring 2020

DPT	CRS #	COURSE TITLE	UNITS	FINAL GRADE	QUALITY POINTS
CS	15210	PRL SEQ DATA STR ALG	12.0	P	0.0
CS	15251	GRT IDEAS THERTCL CS	12.0	P	0.0
CS	15316	SFTWR FNDTN SEC PRIV	9.0	P	0.0
MSC	21122	INTEGRTN & APPROX	10.0	P	0.0
HIS	79393	INST OF ROMAN CHURCH	9.0	B	27.0

	UNITS PASSED	UNITS FACTORED	FINAL QPA	TOTAL POINTS
Semester	**52.0**	**9.0**	**3.00**	**27.0**
Cumulative	**180.0**	**141.0**	**3.21**	**452.0**

Fall 2020

Dean's List

DPT	CRS #	COURSE TITLE	UNITS	FINAL GRADE	QUALITY POINTS
CS	15281	AI RPRSNTN & PRB SLV	12.0	A	48.0
CS	15317	CONSTRUCTIVE LOGIC	9.0	B	27.0
ENG	76101	INTERPRETN & ARGMNT	9.0	A	36.0
PHI	80334	SOC AND POL PHIL	9.0	A	36.0
STU	98000	STUCO: TCHNG PRACTM	3.0	P	0.0

	UNITS PASSED	UNITS FACTORED	FINAL QPA	TOTAL POINTS
Semester	**42.0**	**39.0**	**3.77**	**147.0**
Cumulative	**222.0**	**180.0**	**3.33**	**599.0**

Spring 2021

DPT	CRS #	COURSE TITLE	UNITS	FINAL GRADE	QUALITY POINTS
CS	15330	INTROD COMPTR SECRTY	12.0	B	36.0
PHY	33104	EXPERIMNTL PHYSICS	9.0	B	27.0
STA	36218	PROB THEO CS	9.0	B	27.0
PHI	80326	EPISTEMOLOGY OF ML	9.0	B	27.0
ML	82278	JAPANESE FLM LIT	9.0	A	36.0

	UNITS PASSED	UNITS FACTORED	FINAL QPA	TOTAL POINTS
Semester	**48.0**	**48.0**	**3.19**	**153.0**
Cumulative	**270.0**	**228.0**	**3.30**	**752.0**

Fall 2021

DPT	CRS #	COURSE TITLE	UNITS	FINAL GRADE	QUALITY POINTS
SCS	07599	SCS HNS UNDG RSH THS	18.0	B	54.0
CS	15312	FNDTNS PROGRMG LANG	12.0	B	36.0
CS	15451	ALGORITHM DES & ANLS	12.0	D	12.0
PHY	33120	SCI & SCIENCE FICTN	9.0	A	36.0

	UNITS PASSED	UNITS FACTORED	FINAL QPA	TOTAL POINTS
Semester	**51.0**	**51.0**	**2.71**	**138.0**
Cumulative	**321.0**	**279.0**	**3.19**	**890.0**

Spring 2022

DPT	CRS #	COURSE TITLE	UNITS	FINAL GRADE	QUALITY POINTS
BSC	03230	INTRO MAMMALIAN PHYS	9.0	D	9.0
SCS	07599	SCS HNS UNDG RSH THS	18.0	A	72.0
CS	15440	DISTRIBUTED SYSTEMS	12.0	D	12.0
ENG	76270	WRITNG FOR PROFSNS	9.0	B	27.0

	UNITS PASSED	UNITS FACTORED	FINAL QPA	TOTAL POINTS
Semester	**48.0**	**48.0**	**2.50**	**120.0**
Cumulative	**369.0**	**327.0**	**3.09**	**1010.0**

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John R. Papinchak
University Registrar

Palaiseau (France) September 5, 2024

RELEVÉ DE NOTES - TRANSCRIPT OF RECORDS

Record of Mme Samar Rahmouni born on October 12, 1999 in Tunis (Tunisie)
Academic Year 2023/2024
Year of the program 1
Current Program M1 Fondements de l'Informatique MPRI

Subject No and Course title	Numerical Grade	Letter Grade	ECTS
INF591 Research internships in Computer Science	16	A	20
INF584A Real-time AI in video games: decisive & collaborative actions	16.2	A	5
INF582 Introduction to Text Mining and NLP	5.57	E	5
INF568 Advanced Cryptology	12	C	5
INF564 Compilation	17.25	A	5
INF513 Year 3 Project on Algorithms and Fundamentals of Programming Languages	15	A	5
INF575 Safe Intelligent Systems	11.5	C	5
INF558 Introduction to Cryptology	10	C	5
INF551 Computational Logic: from Artificial Intelligence to Zero Bugs	14	B	5
INF550 Advanced Algorithmics	13	B	5

Ms. Laura Fioni
Vice-Provost for Education at École Polytechnique

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Carnegie Mellon University

Student Name: Samar Rahmouni **Birth Date/Month:** 12-Oct

Fall 2022

DPT	CRS #	COURSE TITLE	UNITS	FINAL GRADE	QUALITY POINTS
BSC	03125	EVOLTN	9.0	C	18.0

	UNITS PASSED	UNITS FACTORED	FINAL QPA	TOTAL POINTS
Semester	**9.0**	**9.0**	**2.00**	**18.0**
Cumulative	**378.0**	**336.0**	**3.06**	**1028.0**

End of Undergraduate Record

A raised seal is not required.
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John K. Papinchak
University Registrar

Transcript Information

This information is also available at:
https://www.cmu.edu/hub/registrar/student-records/transcripts/legend.html

Contact Information
Please direct all questions to The University Registrar's Office:

Carnegie Mellon University
University Registrar's Office
5000 Forbes Avenue
Pittsburgh, PA 15213-3890

Phone: 412-268-4138
Fax:412-268-6651
Email:uro-transcrtipts@andrew.cmu.edu
Website: http://www.cmu.edu/hub

Family Education Rights and Privacy Act (FERPA) of 1974 as Amended
This record is released on the condition that the student information contained herein will not be transferred to a third party without the written consent of the student.

Accreditation
Carnegie Mellon University is an accredited member of the Middle States Commission on Higher Education, 3624 Market St., Philadelphia, PA 19104.

College and department accreditations include:

- Accreditation Board for Engineering Technology (ABET) – Chemical Engineering, Civil Engineering, Electrical and Computer Engineering, Engineering and Public Policy, Mechanical Engineering, and Materials Science and Engineering
- National Architectural Accrediting Board (NAAB) – Architecture
- National Association of Schools of Art and Design (NASAD) – Art and Design
- National Association of Schools of Music (NASM) – Music
- American Assembly of Collegiate Schools of Business (AACSB) and Middle Atlantic Association of College of Business Administration (MAACBA) – David A. Tepper School of Business; American Chemical Society (ACS) – Chemistry
- National Association of Schools of Public Affairs and Administration (NAPAA) – H. John Heinz III College.

Language of Instruction
All Carnegie Mellon University courses are taught in English.

Teaching Location
This transcript reflects all Carnegie Mellon coursework, independent of campus or teaching location.

Calendar
Carnegie Mellon observes the semester system with two six-week summer sessions. Courses may be taught in other shortened sessions.

Course Numbers
Each Carnegie Mellon University course number begins with a two-digit prefix which designates the department offering the course (76-xxx courses are offered by the Department of English, etc.) Although each department maintains its own course numbering practices, typically the first digit after the prefix indicates the class level: xx-1xx courses are freshmen-level, xx-2xx courses are sophomore level, etc. xx-6xx courses may be either undergraduate senior-level or graduate-level, depending on the department. Xx-7xx courses and higher are graduate-level.

Degree Requirements
Degrees are awarded upon satisfactory completion of residence requirements, all requirements in the approved curriculum(a) and by recommendation for degree(s) by the faculty of the appropriate college(s).

Units of Work vs. Credit Hours
Three units equal one semester hour of credit.

Quality Point Average (QPA) Calculations
Carnegie Mellon University defines a quality point as a point value times units for a given course. QPAs are calculated according to the following formula:

Semester QPA: quality points divided by factorable units.
Cumulative QPA: total quality points divided by total factorable units.

Undergraduate courses may not be factorable into the QPA for graduate students, depending on the student's college.

Units Carried vs. Passed vs. Factored
Units Carried refers to the total number of units for which the student is registered.

Units Passed is the total of all units that have a passing grade. Grades of 'R','N', and 'I' are not included in units passed.

Units Factored is the total of all units factored into QPA. See Grading Standards for grades not factorable into QPA. Undergraduate courses are not factorable into QPA for graduate students.

Cumulative QPA
A separate cumulative QPA is calculated for undergraduate and graduate records. If a student attends for a combination of undergraduate, graduate studies, and/or non-degree studies, a cumulative QPA may not be calculated.

Cumulative QPA may not be available on transcripts for semesters prior to 1989.

4.0 Grading Standards
Undergraduate students (and graduate students in CFA, CIT, CMU, MCS, and SCS who entered before Fall 1995):

Grade	*Point Value*	*Description*
A	4.0	Excellent
B	3.0	Good
C	2.0	Satisfactory
D	1.0	Passing
R	0.0	Failure
X	0.0	Conditional Failure
S	non-factorable	Satisfactory
P	non-factorable	Passing
N	non-factorable	Failure in Pass/Fail Course
O	non-factorable	Audit
W	non-factorable	Withdrawal
I	non-factorable	Incomplete
AD	non-factorable	Credit by examination
TR	non-factorable	Transfer credit

4+ Grading Standards / 9.0 Grading Standards
The 4+ grading scale is applicable to graduate students who entered in and after Fall 1995. The 9.0 grading scale is applicable only to certain graduate students who entered before Fall 1995: Students in the Graduate School of Industrial Administration (GSIA, now Tepper School of Business (TSB)), the School of Urban and Public Affairs (SUPA, now Heinz College (HC)), and graduate students who were admitted to the College of Humanities and Social Sciences (H&SS, now Dietrich College (DC)) after August 1986.

Grade	*Point Value (4+)*	*Point Value (9.0)*	*Description*
A+ *	4.33	9	
A	4.00	8	
A-	3.66	7	
B+	3.33	6	
B	3.00	5	
B-	2.67	4	
C+	2.33	3	
C	2.00	2	
C-	1.67	1	
D+ *	1.33	-	
D *	1.0	0	
R	0.0	0	Failure
X	0.0	-	Conditional Failure
S	non-factorable	non-factorable	Satisfactory
P	non-factorable	non-factorable	Passing
N	non-factorable	-	Failure in Pass/Fail Course
O	non-factorable	-	Audit
W	non-factorable	-	Withdrawal
I	non-factorable	-	Incomplete
AD	non-factorable	-	Credit by examination
TR	non-factorable	-	Transfer credit

* DC and CIT graduate students are not permitted to receive an A+. TSB and HC graduate students do not receive D or D+ grades.

After the mid-point of the spring 2020 semester, a global pandemic caused a significant disruption that warranted temporary changes to our grading policy. These changes offered broader use of our Pass/No Pass (P/NP) grading option and the acceptance of passing grades to fulfill degree requirements.

Grading Scale & QPA Conversion
We are unable to provide conversion to other grading scales, such as percentage. A guide to our grading scale is provided on the back of all official transcripts. While we do provide overall semester QPA and cumulative QPA, we are unable to provide an "in-major" QPA (i.e. QPA for courses only in your major).

Physical Education Courses
Physical Education Courses are considered Units Passed in the student's overall semester and cumulative QPA; they are not considered Units Factorable and are not used in calculating the student's overall semester QPA, rank in class or for academic actions.

Statement Of Assurance
Carnegie Mellon University does not discriminate in admission, employment, or administration of its programs or activities on the basis of race, color, national origin, sex, handicap or disability, age, sexual orientation, gender identity, religion, creed, ancestry, belief, veteran status, or genetic information. Furthermore, Carnegie Mellon University does not discriminate and is required not to discriminate in violation of federal, state, or local laws or executive orders.

Inquiries concerning the application of and compliance with this statement should be directed to the Vice President for Campus Affairs, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-2056.

Obtain general information about Carnegie Mellon University by calling 412-268-2000.