

# Curriculum Vitæ

Andrei-Valentin Sipoş

## 1 Personal Data

- Born: March 25, 1991, Bucharest, Romania.
- Citizenship, nationality: Romanian.
- Email address: `andrei.sipos@fmi.unibuc.ro`
- Web address: `https://cs.unibuc.ro/~asipos/`

## 2 Employment

### Current employment

- since February 2024: Associate Professor (*‘Conferențiar’*),  
Department of Computer Science, University of Bucharest.
- since October 2017: Scientific Researcher (*‘Cercetător științific’*),  
Simion Stoilow Institute of Mathematics of the Romanian Academy.

### Past employment

- October 2020 – February 2024: Lecturer / Assistant Professor (*‘Lector’*),  
Department of Computer Science, University of Bucharest.
- October 2017 – September 2020: Research Assistant (*‘Wissenschaftlicher Mitarbeiter’*),  
Department of Mathematics, Technische Universität Darmstadt.
- November 2014 – September 2017: Research Assistant (*‘Asistent de cercetare științifică’*),  
Simion Stoilow Institute of Mathematics of the Romanian Academy.

### 3 Education

- 2017: Ph.D. in Mathematics, University of Bucharest.  
Advisor: Laurențiu Leuștean.  
Thesis title: *Contributions to proof mining*.
- 2014: M.Sc. in Mathematics (Algebra and Number Theory), University of Bucharest.
- 2012: B.Sc. in Computer Science, University of Bucharest.
- 2012: B.Sc. in Mathematics, University of Bucharest.

### 4 Awards

- 2018: Prize for Excellence in Doctoral Research (Category: Mathematics and Computer Science) of the Ad-Astra Association of Romanian Researchers (awarded every two years).
- 2024: Simion Stoilow Prize in Mathematical Sciences of the Romanian Academy (awarded for results obtained in the year 2022).

### 5 Research Projects

#### Project Director

- September 2020 – August 2022: *Proof Mining in Analysis and Optimization*, CNCS Romania, PN-III-P1-1.1-PD-2019-0396.

#### Project Member

- January 2012 – May 2013: *Universal Logic Methods for Computer Science*, CNCS Romania, PN-II-ID-PCE-2011-3-0439.
- January 2015 – October 2016: *Proof mining in metric analysis, geometric group theory and ergodic theory*, CNCS Romania, PN-II-ID-PCE-2011-3-0383.
- October 2015 – September 2017: *Modelling uncertainty in non-classical logics*, CNCS Romania, PN-II-RU-TE-2014-4-0730.
- April 2018 – September 2020: *Proof Mining in Convex Optimization and Related Areas*, DFG Project KO 1737/6-1.
- September 2020 – September 2022: *The convex space of sofic representations*, CNCS Romania, PN-III-P1-1.1-TE-2019-0262.

## 6 Professional Activities

- Organizer of the Seminar on Logic in Computer Science, University of Bucharest (2013-2014).
- Organizer of the LOS/IMAR Logic Seminar, University of Bucharest and Simion Stoilow Institute of Mathematics of the Romanian Academy (since 2014).
- Organizer of the Proof Theory Virtual Seminar, held online (2020-2021).
- Member of the Research Center for Logic, Optimization and Security (LOS), University of Bucharest (since 2021).
- Founding Member and Vice-President of the Institute for Logic and Data Science (ILDS), Bucharest (since 2022).
- Organizer of the Proof Mining Seminar, held online (since 2022).

## 7 Administrative Duties

- Student Member of the Council of the Faculty of Mathematics and Computer Science (2011-2012), University of Bucharest.
- Student Member of the Council of the Doctoral School of Mathematics (2015-2017), University of Bucharest.

## 8 Participation in academic events

### Invited talks

- Days of Logic and Computability IV (Shanin-100).  
St. Petersburg, Russia, May 2019.  
Talk title: *The finitary content of sunny nonexpansive retractions*.
- Meanings and understanding via proofs – Logical and epistemological approaches (CIVIS Summer School).  
Bucharest, Romania, July 2023.  
Talk title: *Glimpses of proof mining*.
- Logic Colloquium 2024.  
Göteborg, Sweden, June 2024.  
Talk title: *An exploration of proof mining* (three-part tutorial).
- The Limits of Incompleteness Workshop.  
Cluj-Napoca, Romania, November 2024.  
Talk title: *Proof mining and the boundaries of finitary reasoning*.

## Contributed talks

- Eighth Congress of Romanian Mathematicians (Iași, Romania, June 2015):  
*Codensity and Stone spaces.*
- Logic Colloquium 2015 (Helsinki, Finland, August 2015):  
*Codensity and Stone spaces.*
- PhDs in Logic VIII (Darmstadt, Germany, May 2016):  
*Proof mining and families of mappings.*
- Logic Colloquium 2016 (Leeds, United Kingdom, August 2016):  
*Proof mining and positive-bounded logic.*
- DVMLG Colloquium Logicum 2016 (Hamburg, Germany, September 2016):  
*Proof mining and positive-bounded logic.*
- PhDs in Logic IX (Bochum, Germany, May 2017):  
*Proof mining in convex optimization.*
- Working Formal Methods Symposium – FROM 2017 (Bucharest, Romania, July 2017):  
*Representable functions in Moisil logic.*
- Logic Colloquium 2017 (Stockholm, Sweden, August 2017):  
*Proof mining in convex optimization.*
- BuCal 2017 (Bucharest, Romania, September 2017):  
*Playing with the logic of Moisil: nuances, games and representations.*
- Workshop on Proofs and Computation, part of the HIM Trimester Program on Types, Sets and Constructions (Bonn, Germany, July 2018):  
*Quantitative results on the method of averaged projections.*
- Logic Colloquium 2018 (Udine, Italy, July 2018):  
*Quantitative results on the method of averaged projections.*
- Ninth Congress of Romanian Mathematicians (Galați, Romania, June 2019):  
*The finitary content of sunny nonexpansive retractions.*
- 13th International Conference on Fixed Point Theory and its Applications (Xinxiang, China, July 2019):  
*The finitary content of sunny nonexpansive retractions.*
- Logic Colloquium 2019 (Prague, Czechia, August 2019):  
*Bounds on strong unicity for Chebyshev approximation with bounded coefficients.*
- Days in Logic 2020 (Lisbon, Portugal, January 2020):  
*Quantitative inconsistent feasibility for averaged mappings.*
- Scandinavian Logic Society Symposium – SLSS 2022 (Bergen, Norway, June 2022):  
*On extracting variable Herbrand disjunctions.*
- Logic Colloquium 2022 (Reykjavík, Iceland, June 2022):  
*On extracting variable Herbrand disjunctions.*

- Logic Colloquium 2023 (Milan, Italy, June 2023):  
*The computational content of super strongly nonexpansive mappings.*
- Tenth Congress of Romanian Mathematicians (Pitești, Romania, June 2023):  
*The computational content of super strongly nonexpansive mappings.*
- DVMLG Colloquium Logicum 2024 (Vienna, Austria, October 2024):  
*Products of hyperbolic spaces.*

## Invitations to international workshops

- MFO Workshop №1745 – Mathematical Logic: Proof Theory, Constructive Mathematics. Oberwolfach, Germany, November 2017.  
Talk given: *Proof mining and the proximal point algorithm.*
- PCC (Proof, Computation, Complexity) 2019. Institut Mittag-Leffler, Djursholm, Sweden, July 2019.  
Talk given: *The finitary content of sunny nonexpansive retractions.*
- MFO Workshop №2046 – Mathematical Logic: Proof Theory, Constructive Mathematics. Oberwolfach, Germany (held online), November 2020.  
Talk given: *Two recent results in proof mining.*
- IASM-BIRS Workshop 21w5156: New Frontiers in Proofs and Computation. Hangzhou, China (held online), September 2021.  
Talk given: *On abstract proximal point algorithms and related concepts.*
- International Conference on Applied Proof Theory 2022 (APT22). Pescara, Italy, August 2022.  
Talk given: *On extracting variable Herbrand disjunctions.*
- MFO Workshop №2346 – Mathematical Logic: Proof Theory, Constructive Mathematics. Oberwolfach, Germany, November 2023.  
Talk given: *The computational content of super strongly nonexpansive mappings.*
- WPM24 – Workshop on Proof Mining 2024. Darmstadt, Germany, September 2024.  
Talk given: *Products of hyperbolic spaces.*

## Selected seminar talks

- Mathematical Logic Seminar XXXI (held online), University of Lisbon, July 2020.  
Talk title: *Two recent results in proof mining.*
- Mathematical Foundations Group Seminar (held online), University of Bath, July 2021.  
Talk title: *A proof mining case study on the unit interval.*

## Other participations

- Third Romanian-Japanese Algebraic Specification Workshop (Sinaia, Romania, April 2012).
- National School on Algebra, 20th edition (Mangalia, Romania, September 2012).
- Faculty of Sciences – 150 Years Anniversary Conference (Bucharest, Romania, September 2013).
- National School on Algebra, 21st edition (Bucharest, Romania, September 2013).
- Second Fall School on Quantum Geometry (Erlangen, Germany, October 2013).
- Scandinavian Logic Society Summer School in Logic 2015 (Helsinki, Finland, July 2015).
- ManyVal 2019 – the 8th International Workshop on Many-Valued Logic (Bucharest, Romania, November 2019).
- Nordic Logic Summer School – NLS 2022 (Bergen, Norway, June 2022).
- Working Formal Methods Symposium – FROM 2022 (Iași, Romania, September 2022).
- Working Formal Methods Symposium – FROM 2024 (Timișoara, Romania, September 2024).
- IMAR 75 Anniversary Conference (Bucharest, Romania, September 2024).

## Organizing

- DACS (Days of Computer Science) 2015 (CiE 2015 associated workshop).  
With: Denisa Diaconescu, Adela Georgescu, Florin Manea, Marius Popescu.  
Bucharest, Romania, June 2015.
- Proof and Computation in Mathematics Minisymposium (part of the DMV Annual Meeting 2020).  
With: Sam Sanders.  
Chemnitz, Germany (held online), September 2020.
- RV/ILDS/LOS InFormal Workshop on Logics.  
With: Denisa Diaconescu, Traian Florin Șerbănuță.  
Bucharest, Romania, January 2023.
- RV/ILDS Blockchain Workshop.  
With: Denisa Diaconescu, Laurențiu Leuștean, Grigore Roșu, Traian Florin Șerbănuță, Alin Ștefănescu.  
Bucharest, Romania, March 2023.
- ILDS-FMI Coq and Lean Autumn School 2023.  
With: Laurențiu Leuștean, Natalia Ozunu, Traian Florin Șerbănuță.  
Bucharest, Romania, September 2023.  
Gave the lecture *Introduction to Type Theory for Interactive Theorem Proving*.

- Working Formal Methods Symposium – FROM 2023.  
With: Horațiu Cheval, Nicoleta Dumitru, Ioana Leuştean, Laurențiu Leuştean, Natalia Ozunu, Traian Florin Şerbănuță.  
Bucharest, Romania, September 2023.

## 9 Scientific visits

- June 22 - July 6, 2016: Universidad de Sevilla, Spain (invited by Genaro López-Acedo).  
Invited talk: *Effective results on algorithms using strict pseudocontractions*.
- November 7-25, 2016: Technische Universität Darmstadt, Germany (invited by Ulrich Kohlenbach).  
Invited talk: *Proof mining in  $L^p$  spaces*.
- July 19-30, 2021: Technische Universität Darmstadt, Germany (invited by Ulrich Kohlenbach).
- September 20-29, 2021: Universidad de Sevilla, Spain (invited by Genaro López-Acedo).  
Invited talk: *A proof mining case study on the unit interval*.

## 10 Papers

1. “Quantitative results on the Ishikawa iteration of Lipschitz pseudo-contractions” (with Laurențiu Leuştean and Vlad Radu),  
*Journal of Nonlinear and Convex Analysis*, Volume 17, Number 11, 2277–2292, 2016.
2. “Effective results on a fixed point algorithm for families of nonlinear mappings”,  
*Annals of Pure and Applied Logic*, Volume 168, Issue 1, 112–128, 2017.
3. “A note on the Mann iteration for  $k$ -strict pseudocontractions in Banach spaces”,  
*Numerical Functional Analysis and Optimization*, Volume 38, Issue 1, 80–90, 2017.
4. “Codensity and Stone spaces”,  
*Mathematica Slovaca*, Volume 68, Issue 1, 57–70, 2018.
5. “An application of proof mining to the proximal point algorithm in CAT(0) spaces” (with Laurențiu Leuştean),  
in: A. Bellow, C. Calude, T. Zamfirescu (eds.), *Mathematics Almost Everywhere. In Memory of Solomon Marcus* (pp. 153–168), World Sci. Publ., Hackensack, NJ, 2018.
6. “Effective strong convergence of the proximal point algorithm in CAT(0) spaces” (with Laurențiu Leuştean),  
*Journal of Nonlinear and Variational Analysis*, Volume 2, Issue 2 (Special issue on Nonlinear Analysis and Optimization dedicated to Professor Simeon Reich), 219–228, 2018.
7. “An abstract proximal point algorithm” (with Laurențiu Leuştean and Adriana Nicolae),  
*Journal of Global Optimization*, Volume 72, Issue 3, 553–577, 2018.

8. “The asymptotic behaviour of convex combinations of firmly nonexpansive mappings”, *Journal of Convex Analysis*, Volume 26, Number 3, 911–924, 2019.
9. “Proof mining in  $L^p$  spaces”, *Journal of Symbolic Logic*, Volume 84, Issue 4, 1612–1629, 2019.
10. “The finitary content of sunny nonexpansive retractions” (with Ulrich Kohlenbach), *Communications in Contemporary Mathematics*, Volume 23, Number 1, 19550093 [63 pages], 2021.
11. “Rates of metastability for iterations on the unit interval”, *Journal of Mathematical Analysis and Applications*, Volume 502, Issue 1, 125235 [11 pages], 2021.
12. “Construction of fixed points of asymptotically nonexpansive mappings in uniformly convex hyperbolic spaces”, *Numerical Functional Analysis and Optimization*, Volume 42, Issue 6, 696–711, 2021.
13. “A quantitative multiparameter mean ergodic theorem”, *Pacific Journal of Mathematics*, Volume 314, Number 1, 209–218, 2021.
14. “Bounds on strong unicity for Chebyshev approximation with bounded coefficients”, *Mathematische Nachrichten*, Volume 294, Issue 12, 2425–2440, 2021.
15. “Quantitative inconsistent feasibility for averaged mappings”, *Optimization Letters*, Volume 16, Issue 6, 1915–1925, 2022.
16. “On extracting variable Herbrand disjunctions”, *Studia Logica*, Volume 110, Issue 4, 1115–1134, 2022.
17. “Revisiting jointly firmly nonexpansive families of mappings”, *Optimization*, Volume 71, Number 13, 3819–3834, 2022.
18. “Abstract strongly convergent variants of the proximal point algorithm”, *Computational Optimization and Applications*, Volume 83, Issue 1, 349–380, 2022.
19. “A proof-theoretic metatheorem for tracial von Neumann algebras” (with Liviu Păunescu), *Mathematical Logic Quarterly*, Volume 69, Issue 1, 63–76, 2023.
20. “On quantitative metastability for accretive operators”, *Zeitschrift für Analysis und ihre Anwendungen*, Volume 43, Number 3/4, 417–433, 2024.
21. “The computational content of super strongly nonexpansive mappings and uniformly monotone operators”, arXiv:2303.02768 [math.OC], 2023. To appear in: *Israel Journal of Mathematics*.
  - “Normal forms and representable functions in Moisil logic”, arXiv:2304.00288 [math.LO], 2023. Submitted.
  - “Products of hyperbolic spaces” (with Pedro Pinto), arXiv:2408.14093 [math.MG], 2024. Submitted.



## 11 Edited volumes

1. Proceedings 7th Symposium on *Working Formal Methods* – FROM 2023 (with Horațiu Cheval and Laurențiu Leuştean), <https://doi.org/10.4204/EPTCS.389>, 2023.

## 12 Teaching

### At the University of Bucharest

- *Mathematical Logic*, 1st year course and tutorial, Summer Term 2020/2021, 2021/2022, 2022/2023, 2023/2024.
- *Fundamentals of Programming Languages*, 2nd year course and lab, Summer Term 2023/2024.
- *Concurrent Processes*, 2nd Master's year course and lab, Summer Term 2021/2022, 2022/2023, 2023/2024.
- *Development of Web Applications*, 3rd year course, Winter Term 2020/2021.
- *Mathematical and Computational Logic*, 1st year tutorial, Winter Term 2013/2014, 2014/2015, 2015/2016, 2016/2017, 2020/2021, 2021/2022, 2022/2023, 2023/2024.
- *Functional Programming*, 2nd year lab, Winter Term 2023/2024.
- *Logic Programming*, 2nd/3rd year lab and tutorial, Summer Term 2013/2014, 2014/2015, 2015/2016, 2016/2017, 2020/2021.
- *Declarative Programming*, 3rd year lab, Winter Term 2014/2015.
- *Model Theory*, 1st Master's year tutorial, Summer Term 2016/2017.
- *Operating Systems*, 2nd year lab, Winter Term 2021/2022, 2022/2023.
- *Web Techniques*, 1st year lab, Summer Term 2020/2021.

### At TU Darmstadt

- *Introduction to Mathematical Logic*, 3rd year exercise session, Winter Term 2017/2018, 2018/2019, 2019/2020.
- *Applied Proof Theory*, 1st Master's year exercise session, Summer Term 2017/2018.