Concurso de Projetos Exploratórios em Todos os Domínios Científicos 2023
2023.15110.PEX

Estado
Rascunho

Fecha a
01.03.2024

Visão Global de Candidatura

Dados gerais

Investigador responsável
Francisco Manuel Gonçalves Coelho

Título do projeto em português
Indução de Stochastic Answer Set Programs por Meios Algébricos

Título do projeto em inglês
Induction of Stochastic Answer Set Programs by Algebraic Means

Acrónimo do projeto
IAM

Palavras-chave em português

Indução de Programas Lógicos   Programação Lógico-Probabilística   Programação de Conjunto de Resposta

Palavras-chave em inglês

Inductive Logic Programming   Probabilistic Logic Programming   Answer Set Programming

Área científica principal

Domínio científico
Ciências Exatas

Área científica
Ciências da Computação e Ciências da Informação

Subárea científica
Ciências da Computação

Painel de avaliação
Computer and Information Sciences and Informatics

Calendarização

Data de início
01.09.2024

Duração (meses)
18

Instituições

Instituição proponente

Instituição
Universidade de Évora

Unidade de I&D
→ NOVA Laboratory for Computer Science and Informatics

Descrição da instituição e respetivas competências para o desenvolvimento do projeto

-

Instituições de colaboração

-

Equipa de investigação

Investigador responsável

Francisco Manuel Gonçalves Coelho   Nuclear   IR

Ciência ID
AF10-03F3-E074

Instituição à qual está associado no âmbito do projeto de investigação
Universidade de Évora

CV
Obtido em 25-02-2024 at 15:48:59 GMT

CV narrativo do IR

Percurso Científico e Curricular

1993 Degree in Mathematics, FCUL.

1997 MSc in Mathematics (Algebra), FCUL. About Hilbert's tenth problem and a computational model based on geometric constructions with ruler and compass.

1997 Teaching Assistant, Mathematics Department, UÉ.

2006 PhD in Informatics (Computer Science), UL. About deliberation by autonomous agents.

2006 Assistant Professor, Mathematics Department, UÉ.

2006-2021, Period of minor visible activity, dedicated to learn statistical AI. Here I started to think about the limitations and advantages of the statistical vs. logic AI approaches and how they can contribute to each other.

2006 Assistant Professor, Computer Science Department, UÉ.

2008 Article "The euclid abstract machine: Trisection of the angle and the halting problem". Develops the ideas about computing and geometry, started in the master's dissertation.

2010 Book "Teoria da Computação, Computabilidade e Complexidade" (Escolar Editora). For graduate students.

2015 Article "Probabilistic perception revision in AgentSpeak(L)". Initial study on the integration of logic and statistical AI.

2016 Book "Introdução à Matemática - Álgebra, Análise e Otimização" (LIDEL). For undergraduate students.

2017 Article "A method for regularization of evolutionary polynomial regression" (Applied Soft Computing). Proposes a method for learning polynomial models using genetic algorithms.

2021 Researcher at the chair "High Performance Computing" at UÉ. Organized and taught an introduction course to the Julia language, aimed at the digital humanities and social sciences.

2021 Integrated member of the NOVALINCS center. I have been researching the extension of the ASP language with probabilistic annotations.

2022 CPCA/A0 Project "JuPy". Small FCT founded project exploring the use of "high-level" languages (Julia, Python) in distributed computing and HPC systems.

2023 Work on the extension of ASP with probabilistic annotations, and respective induction by a set of data and background knowledge.

Contribuições para a Ciência e a Sociedade

Contribuições da originalidade de ideias, ferramentas, metodologias ou conhecimento

- 2021, Mentor of i-Days: Student competition to tackle health challenges, organized by EIT-Health and StartUB!C (Universidad de Barcelona), that took place in PACT, Évora. i-Days promote health innovation among university students through dozens of one-day and two-day programmes held in academic institutions around Europe.

- Co-author of "Lattice-Maker", a set of tools to present lattices of combinatorial games in LaTeX, used on the PhD thesis "Lattices related to Conway's construction", where I was member of the juri, and two papers where I'm co-author: DOI:10.1016/j.tcs.2014.01.025 (2014) and DOI:10.1007/s00182-020-00715-3 (2021).

- Author of "TeseUE", a LaTeX class to MSc dissertations and PhD thesis in Universidade de Évora, is currently used by many students.

- Co-author of "Genetic Algorithms for Polynomial Regression", R code to find the best polynomial regression using genetic algorithms, used in the journal paper DOI:10.1016/j.asoc.2017.05.047 (2017).

- Author of "Galaxity", a Java system to assess the correction of perceptions of AgentSpeak(L) agents using probabilistic methods, used in the conference paper DOI:10.1007/978-3-319-25524-8_44 (2015).

Contribuições para o desenvolvimento de competências ao nível individual e/ou em equipas

- 2023, 2024, coordinator and teacher of the online course "Programming in Julia for Digital Humanities", aimed to digital humanities and social sciences researchers, part of the training and dissemination activities of the HPC Centre and the HPC Chair.

- 2024, mentor of the mini-project "Automatic Differentiation", aimed at MSc and PhD students, at the Birla Institute of Technology and Science, Pilani, India, within the Asian and European Schools in Mathematics. Travel was supported by a CIMPA scholarship.

- 2024, teacher of the course "An Introduction to Julia for Scholars", aimed at MSc and PhD students and researchers, at the Birla Institute of Technology and Science, Pilani, India, within the Asian and European Schools in Mathematics. Travel was supported by a CIMPA scholarship.

- Since 2016, course director and teacher of "Introdução ao LaTeX" (Introduction to LaTeX), directed at students and researchers, at U. Évora.

- 2016, Co-author of the book "Introdução à Matemática - Álgebra, Análise e Otimização"(LIDEL), ISBN:978-989-752-209-3, addressing core mathematical subjects (algebra, calculus and optimization) for social sciences university courses. Used in the course "Matemática Aplicada à Economia e Gestão", Universidade de Évora.

- 2010, co-author of the book "Teoria da Computação, Computabilidade e Complexidade", ISBN:978-972-592-281-1, where computation is explained starting with simple machines, addressing the computation limits such as the Halting Problem, polynomial equivalence and complexity. A draft version of this book was used in the course "Teoria da Computabilidade e Complexidade", Universidade de Évora.

- Since 2023, mentor of one BII Scholarship within the scope of the multi-annual financing of the R&D unit with reference UIDP/04516/2020, financed by national funds through the FCT/MCTES.

- Since 2022, supervisor of three ongoing PhD thesis on computer science.

- Since 2010, supervisor of six completed and three ongoing MSc dissertations about topics such as e-learning, virtual reality, serious games or game design.

- Since 2010, member of the juri in 13 academic examinations, including three as examiner.

- Since 2006, assistant professor at UÉ. Within this role I coordinated more than 26 courses, including mathematics and computer science, for graduation or MSc grades.

Contribuições para a Comunidade Científica e para a Sociedade

- Since 2022, reviewer for the "Applied Soft Computing" journal (Q1).

- Since 2021, participation in the "High Performance Computing Chair" of U. Évora, as member of the scientific team, technical-scientific board, coordinator of the "Programming in Digital Humanities" task and member of five work packages.

- Since 2011, member of several organizing and scientific committees of international scientific events. In the most recent, the international conference "Programming and Data Infrastructure in Digital Humanities", I was member of both the scientific and organizing committee.

- Since 1997, fifteen communications at scientific dissemination events, either at international conferences or invited to scientific lectures.

- 2024, 2023, 2010, visited higher education institutions in India, the Czech Republic and Timor-Lorosa'e to disseminate knowledge and to establish or reinforce cooperation between U. Évora and local HEI.

- 2010, 2016, Co-author of two pedagogical books, about Mathematics and Computer Science, aimed at higher education

- students, contributions to the dissemination of knowledge.
- Since 2016, course director and teacher of "Introdução ao LaTeX" (Introduction to LaTeX), directed at students and researchers, at U. Évora.
- 2023, 2024, An introduction course to the Julia language, for researchers in the areas of digital humanities and social sciences.
- 2023, Invited Talk, "Fronteiras da Inteligência Artificial", Festival da Ciência'23, U. Évora, aimed at societal engagement with science.
- 2024, An introduction course to the Julia language, for students on technical courses and researchers.
- 2024, A mini-project/introduction course to automatic derivation with Python, for students of technical courses.

Resultados ou/e atividades relevantes

Activity "Combinatorial Games Theory" and results

Contributed to the development of "Lattice-Maker", a set of tools to present lattices of combinatorial games in LaTeX, available in the public repository <https://github.com/fmgc/Lattice-Maker>.

Lattice-Maker was used by Cátia Dias on her PhD thesis "Lattices related to Conway's construction" where I was member of the juri, and in two international, indexed, jornal papers:

- 2021, Carvalho, Dias, Coelho, Neto, Nowakowski, Vinagre, "On lattices from combinatorial game theory: infinite case", DOI:10.1007/s00182-020-00715-3
- 2014, Carvalho, Santos, Dias, Coelho, Neto, Nowakowski, Vinagre, "On lattices from combinatorial game theory. Modularity and a representation theorem: Finite case", DOI:10.1016/j.tcs.2014.01.025

Activity "Polynomial Regression" and results

Contributed to "Genetic Algorithms for Polynomial Regression", R code to find the best polynomial regression using genetic algorithms, available in the public repository <https://github.com/jpneto/GenAlgPoly>.

This program was used in the international, indexed, journal paper

- 2017, Coelho e Neto, "A method for regularization of evolutionary polynomial regression", DOI:10.1016/j.asoc.2017.05.047

This is my most cited work (10 citations), of which two in 2023, six years after publishing.

Activity "Perception Correction" and results

Implemented "Galaxity", a Java system to assess the correction of perceptions of AgentSpeak(L) agents using probabilistic methods, and "jpgm", a small Java library to support simple probabilistic graphical models (pgm) computations used in Galaxity. These are available in the public repositories <https://bitbucket.org/mangon/galaxity> and <https://github.com/fmgc/jpgm>.

"Galaxity" (and "jpgm") where used in the conference paper

- 2015, Coelho e Nogueira, "Probabilistic perception revision in AgentSpeak(L)", DOI:10.1007/978-3-319-25524-8_44

Activity "Stochastic Answer Set Programs" and results

Started in 2023 and is currently my main research activity, a continuation of "Perception Correction" towards the combination of statistical ans logic AI. At this moment the outcomes of this activity are

- BII Scholarship about "Stochastic Answer Set Programs" attributed to Alice Martins.
- Draft programs, available in the public repository <https://git.xdi.uevora.pt/fc/zugzwang/tree/master/code>.
- A paper, "An Algebraic Approach to Stochastic ASP", in co-authorship, recently submitted to a international conference.

Que relevância atribui a este financiamento para a fase atual da sua carreira e/ou do seu percurso de investigação?

2006, PhD thesis about deliberation.

Deliberation, selecting an action from perceptions and internal state, embodies the key challenges of AI, from computer vision to planning, learning, complexity or the frame problem. Each can be stated as a statistical problem (eg POMDP) or as a logical one (eg "plans" as formal expressions processed by symbolic rules).

Each has strengths and weaknesses. Statistical models require large amounts of data to train while inductive logic programs often result from background knowledge and small sets of examples but the former are robust to noise while the latter are fragile.

By then my unclear research goal become how to combine the strengths of statistical and logic AI.

Other issues interrupted this research.

2015, author of Galaxity, a system to play with correction of perceptions of logic agents using probabilistic methods; Described in **DOI:10.1007/978-3-319-25524-8_44**, a initial study on combining logic and statistical AI.

BDI agents often win planning competitions where, unlike real scenarios, perception is perfect. The Galaxity system introduces noise in the agent's perception and uses a HMM to estimate the probability of the real state. This is then tested in simulations, outperforming other agents also subject to noisy perceptions.

Despite the positive result, this is a shallow approach with no substantial theoretical base to support further work.

By then I have learned about probabilistic logic programming, the Sato semantics and Markov logic.

Other issues interrupted this research.

Since 2023, mentor of a BII Scholarship about Stochastic Answer Set Programs (SASP).

Answer Set Programming (ASP) is a pure declarative logic language with excellent tool support and theoretical foundations (Gelfond and Lifschitz stable models). Semantics for probabilistic versions of ASP have been proposed but the problem is still very much open.

My, Bruno Dinis and Salvador Abreu approach is described in "An Algebraic Approach to Stochastic ASP", recently submitted to an international conference.

We address the problem of extending probability from total choices to stable models, and from there to general events. Possible applications include assigning a score to a logic program with respect to the empiric distribution of a dataset, which can be used by evolutionary algorithms searching optimal models of that dataset. From there we have induction of stochastic ASP.

This paper is the root to the research proposed with this project:

1. Investigate the structure and composition of SASP and transformation rules to **support program space search by evolutionary algorithms**.
2. Implement a library to **support SASP evaluation** using existing ASP systems.
3. Explore how distributed HPC systems can be used to **scale-up and speed-up the evaluation of SASP**.
4. Investigate the **application of SASP to theoretical and real-world problems**.

Membros

Bruno Miguel Antunes Dinis   Nuclear   Membro

Associação
Confirmada

Ciência ID
3E1F-A94E-D147

Instituição à qual está associado no âmbito do projeto de investigação
Universidade de Évora

CV
Obtido em 23-02-2024 at 15:10:13 GMT

Miguel Ângelo Pignatelli de Avillez Nunes Pereira   Nuclear   Membro

Associação
A confirmar

Ciência ID
4110-30FC-E46E

Instituição à qual está associado no âmbito do projeto de investigação
Universidade de Évora

CV

-

SALVADOR LUÍS DE BETHENCOURT PINTO DE ABREU Nuclear Membro

Associação
A confirmar

Ciência ID
C617-7ED4-8326

Instituição à qual está associado no âmbito do projeto de investigação
Universidade de Évora

CV
-

Novas contratações

(BI-a - 01) Bolsa de Investigação - Estud. dout. ou lic. e mestres em CNCG

Instituição
Universidade de Évora

Tarefas
Integration with existing ASP and ILP software frameworks (INT) · 12 pessoa * mês

Consultores
-

Sinopse do cv da equipa

- **Francisco Coelho** completed his PhD in Informatics in 2006 at Universidade de Lisboa under the supervision of Helder Coelho on Artificial Intelligence. Is previous formation is on Mathematics, where he has a Master degree in Mathematics, specialty Algebra, with a dissertation about Hilbert's tenth problem and about geometric computation, advised by Prof. Augusto Franco de Oliveira and Prof. José Félix Costa. Currently he is Assistant Professor at the Computer Science department of Universidade de Évora, where he has coordinated more than twenty courses and restructured or proposed other six, to the graduation and master degrees. He is supervising three PhD thesis and two MSc dissertations and has supervised other six completed MSc dissertations. He contributed with software and writing to papers covering a wide range of subjects but mostly about logic and statistical AI. He is integrated member of the Intelligent Systems of the research unit NOVALINCS and member of the scientific team of the High Performance Computing Chair.
- **Bruno Dinis** completed his PhD in Maths in 2013 at the University of Évora under the supervision of Imme van den Berg on Nonstandard Analysis. After his doctoral studies, he was a postdoc at the Faculdade de Ciências under the supervision of Fernando Ferreira, working on Proof Theory. Bruno Dinis is currently an Assistant Professor at the Universidade de Évora. Co-supervised 1 master's dissertation. He has written over 20 papers on several aspects of logic, for the most part in proof interpretations and its applications (proof mining).

Plano de trabalho

Resumo

Resumo em português
-

Resumo em inglês
-

Resumo para publicação

Resumo para publicação em português
-

Resumo para publicação em inglês
-

Estado da arte e objetivos

-

Plano de investigação e métodos

-

Identifique se o plano de trabalhos requer recursos computacionais avançados a providenciar pela FCT
Sim

Identifique se o plano de trabalhos requer espaço num repositório de dados de investigação a providenciar pela FCT
Sim

Referências bibliográficas

-

Publicações anteriores

Coelho, F., & Neto, J. P. (2017). A method for regularization of evolutionary polynomial regression. Applied Soft Computing, 59, 223-228.
https://doi.org/10.1016/j.asoc.2017.05.047

Dinis, B., & Miquey, É. (2023). Stateful Realizers for Nonstandard Analysis. Logical Methods in Computer Science, 19.
https://doi.org/10.46298/lmcs-19(2:7)2023

Coelho, F., & Nogueira, V. (2015). Probabilistic perception revision in AgentSpeak (L). In PRIMA 2015: Principles and Practice of Multi-Agent Systems: 18th International Conference, Bertinoro, Italy, October 26-30, 2015, Proceedings 13 (pp. 613-621). Springer International Publishing.
https://doi.org/10.1007/978-3-319-25524-8_44

Tarefas

RESUMO DE CUSTOS POR INSTITUIÇÃO

Universidade de Évora

1. Structure and Induction of SASP (SI)	4 440,00 €
2. Integration with existing ASP and ILP software frameworks (INT)	23 337,36 €
3. High Performance Computing for Induction and Use of SASPs (HPC)	4 095,00 €
4. Applications of SASPs (APP)	3 470,00 €
Total	**35 342,36 €**

1	**Structure and Induction of SASP (SI)**	6 meses	De 01.09.2024 a 28.02.2025

Membros

Pessoas / Mês	Alocados
1	Bruno Miguel Antunes Dinis Universidade de Évora
1	Francisco Manuel Gonçalves Coelho Universidade de Évora
1	SALVADOR LUÍS DE BETHENCOURT PINTO DE ABREU Universidade de Évora

Descrição da tarefa e resultados esperados

- **Objectives**: Clarify the role of Stochastic Answer Set Programs (SASPs) structure and composition elements (eg stratified or recursive programs, functional symbols) in the stable models, our equivalence relation of events, and existing ASP and ILP systems; Proceed from already established (in existing research) scoring programs methods to SASPs using program space exploration algorithms based on program transformation rules (eg genetic algorithms).
- **Methods**: Investigate SASP structures and composition elements, how they affect stable models, event classes, and respective probability; Investigate program transformation rules and program space exploration algorithms in the context of SASPs.
- **Expected results**: Assessment on the effects of the studied structures and composition elements on stable models, event classes, and respective probability; Compilation and assessment of program transformation rules and space explorations algorithms for SASPs.
- **Links to other tasks**:
  - Pre-reconditions from other tasks: None - this is an initial task, a continuation of already done research;
  - Results for other tasks:
    - INT, HPC: This task gives important insights into algorithm design and implementation, for the computation of the event classes and respective probabilities, either in a sequential setting (INT task) or distributed (HPC task).
- **Partners and Institution roles**: Universidade de Évora, Principal contractor;
- **Justification for the needed resources**: A member should present the results of this task in an international conference, requiring support for registration, travel, per diem.

Entregáveis e datas previstas de apresentação

1. Two papers accepted in A* or A international conferences or Q1 journals, by 2025-03-01.

Justificação global dos custos da tarefa

1. Registration in international conference (x2): 1400.00€
2. Travel to international conference (x2): 1000.00€
3. Per diem international conference (x3x2): 1152.00€
4. Overheads (25%): 888.00€
5. **Total**: 4440.00€

Orçamentos

Instituição	Fin. solicitado
Universidade de Évora	4 440,00 €

2	**Integration with existing ASP and ILP software frameworks (INT)**	12 meses	De 01.12.2024 a 30.11.2025

Membros

Pessoas / Mês	Alocados
12	BI-a - 01 Bolsa de Investigação - Estud. dout. ou lic. e mestres em CNCG Universidade de Évora
2	Francisco Manuel Gonçalves Coelho Universidade de Évora

Descrição da tarefa e resultados esperados

- **Objectives**: A library, and its documentation, to enable efficient SASP related computations: parsing, event classes and probabilities, induction.
- **Methods**: Implement, test, document and demonstrate a library to process SASP programs (parse the SASP language; utilize existing ASP frameworks to compute stable models; compute the event classes and respective probabilities; induce SASPs from data).
- **Expected results**: A library that implements the algorithms proposed in previous tasks and existing research, to be utilized in future applications and tasks, and associated documentation; A PhD graduation; Contributions to existing ASP frameworks, such as Potassco.
- **Links to other tasks**:
  - Preconditions from other tasks: None - this is an initial task, a continuation of already done research; However, results from task SI will guide the implementation for induction of SASPs from data and background knowledge.
  - Results for other tasks:
    - HPC: A proposed library API, to guide the implementation in the HPC task.
    - APP: This applied task requires adequate software support, ie the library and documentation delivered by this task.
- **Partners and Institution roles**: Universidade de Évora, Principal contractor;
- **Justification for the needed resources**: The implementation volume and complexity requires a fulltime PhD student working over a year, using a suitable laptop; The PhD student should present the results of this task in an international conference, requiring support for registration, travel, per diem.

Entregáveis e datas previstas de apresentação

1. Proposal for the library API, by 2025-03-01.
2. Report documenting the features and progress in the library implementation, by 2025-06-01.
3. Paper accepted in a A* or A international conference or Q1 journal, by 2025-09-01.
4. Library, and the respective documentation, to parse SASP; interface with existing ASP frameworks; compute event classes and respective probabilities, by 2025-06-01.
5. Completed PhD thesis, by 2025-12-01.

Justificação global dos custos da tarefa

1. Laptop Computer (i7; 32GB RAM; 1TB SSD; 15") 2658.21€
2. Registration in international conference 700.00€
3. Travel to international conference 1000.00€
4. Per diem international conference (x3) 576.00€
5. BI Scholarship (12 months, 1144.64€/month) 13735.68€
6. Overheads (25%) 4667.47€
7. **Total** 23337.36€

Orçamentos

Instituição	Fin. solicitado
Universidade de Évora	23 337,36 €

3	**High Performance Computing for Induction and Use of SASPs (HPC)**	12 meses	De 01.03.2025 a 28.02.2026

Membros

Pessoas / Mês	Alocados
2	Francisco Manuel Gonçalves Coelho Universidade de Évora
2	Miguel Ângelo Pignatelli de Avillez Nunes Pereira Universidade de Évora

Descrição da tarefa e resultados esperados

- **Objectives**: Use High Performance Computing systems to speedup and scale-up applications of SASPs.

- **Methods**: Benchmark the benefits of data and process distribution for SASPs on High Performance Computing systems.

- **Expected results**: Compilation and assessment of distributed SASPs on HPC systems; A library that implements distributed versions of some API functions described in the INT task, to be utilized in future applications and tasks, and associated documentation;

- **Links to other tasks**:

  ○ Preconditions from other tasks:

    ▪ INT: The proposed library API is utilized to guide this task implementation, in order to strive for compatibility.

    ▪ SI: Results from task SI will guide the implementation for induction of SASPs from data and background knowledge.

  ○ Results for other tasks:

    ▪ APP: This applied task requires adequate software support, ie the library and documentation delivered by this task.

- **Partners and Institution roles**:

  ○ Universidade de Évora, Principal contractor;

  ○ High Performance Computing Chair, Research Unit;

- **Justification for the needed resources**:

  ○ A member should present the results of this task in an international conference, requiring support for registration, travel, per diem.

  ○ Adaptation of sequential programs to HPC systems requires expert consultation.

  ○ An HPC system is required to this task.

Entregáveis e datas previstas de apresentação

1. Report on the performance of the distributed versions of the programs to interface with existing ASP frameworks and compute event classes and respective probabilities, by 2025-09-01.

2. A library or set of programs for distributed evaluation of SASP on HPC systems, by 2025-12-01.

3. Paper accepted in a A* or A international conference or Q1 journal, by 2026-03-01.

Justificação global dos custos da tarefa

1. Registration in international conference 700.00€

2. Travel to international conference 1000.00€

3. Per diem international conference (x3) 576.00€

4. HPC system 1000.00€

5. Overheads (25%) 819.00€

6. **Total** 4095.00€

Orçamentos

Instituição	Fin. solicitado
Universidade de Évora	4 095,00 €

4	**Applications of SASPs (APP)**	6 meses	De 01.09.2025 a 28.02.2026

Membros

Pessoas / Mês	Alocados
1	Francisco Manuel Gonçalves Coelho Universidade de Évora
1	Miguel Ângelo Pignatelli de Avillez Nunes Pereira Universidade de Évora
1	SALVADOR LUÍS DE BETHENCOURT PINTO DE ABREU Universidade de Évora

Descrição da tarefa e resultados esperados

- **Objectives**: Apply SASP, and SASP induction, to some theoretic scenarios (toy problems) described in the relevant literature (eg Stochastic Plan Generation, Logic/Statistic Puzzles) as well as to some real world cases.

- **Methods**: Compile a set of theoretic and real-world problems; Gather information in the form of background knowledge (eg from experts) and data (positive and negative examples) about selected problems; Evaluate hand-coded and induced SASPs on that set; Compare with state-of-the-art results.

- **Expected results**: Assessment of the performance of hard-coded and induced SASPs with respect to selected theoretical and real-world problems.

- **Links to other tasks**:

  ○ Preconditions from other tasks: Libraries, and respective documentation, from tasks IFS and HPC.

  ○ Results for other tasks: None - This is a final task.

- **Partners and Institution roles**:

  ○ Universidade de Évora, Principal contractor;

  ○ High Performance Computing Chair, Research unit;

- **Justification for the needed resources**:

  ○ A member should present the results of this task in an international conference, requiring support for registration, travel, per diem.

  ○ An HPC system is required to this task.

Entregáveis e datas previstas de apresentação

1. A paper accepted in a A* or A international conference or Q1 journal, by 2026-03-01.

Justificação global dos custos da tarefa

1. Registration in international conference 700.00€

2. Travel to international conference 1000.00€

3. Per diem international conference (x3) 576.00€

4. HPC system 500.00€

5. Overheads (25%) 694.00€

6. **Total** 3470.00€

Orçamentos

Instituição	Fin. solicitado
Universidade de Évora	3 470,00 €

Calendarização e gestão do projeto

Lista de milestones

Data	Designação	Descrição	Tarefas
01.03.2025	SI Two Papers	Two papers accepted in A* or A international conferences or Q1 journals, one describing the effects of structures and composition elements on SASP on stable models, event classes, and respective probability; other describing program transformation rules and space exploration algorithms for SASPs.	1. Structure and Induction of SASP (SI)
01.09.2025	INT Library + Paper	A library and set of programs to support the evaluation of SASP and a paper accepted in a A* or A international conference or Q1 journal, describing the features, strengths and limitations of that library.	2. Integration with existing ASP and ILP software frameworks (INT)
01.12.2025	HPC Library + Report	A library or set of programs for distributed evaluation of SASP on HPC systems and a report organizing and documenting the use of that library.	3. High Performance Computing for Induction and Use of SASPs (HPC)
01.12.2025	INT Thesis	A PhD thesis about SASP and a library and set of programs to support the evaluation of SASP.	2. Integration with existing ASP and ILP software frameworks (INT)
01.03.2026	APP Paper	A paper accepted in a A* or A international conference or Q1 journal, assessing the performance of hard-coded and induced SASPs with respect to selected theoretical and real-world problems.	4. Applications of SASPs (APP)
01.03.2026	HPC Paper	A paper accepted in a A* or A international conference or Q1 journal, describing compilation and assessment of distributed SASPs on HPC systems.	3. High Performance Computing for Induction and Use of SASPs (HPC)

Cronograma

timeline.pdf

Obtido em 25-02-2024 pelas 16:44:51

Descrição da estrutura de gestão

-

Questões éticas

Existem questões éticas identificadas neste projeto?

Não

Declarações de ética que considera apropriadas

-

Fundamentação

-

Agenda 2030

Enquadramento da candidatura nos OSD da Agenda 2030

-

Fundamentação

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Outros projetos

CPCA/A0/427668/2021 Fundação para a Ciência e a Tecnologia - FCT, I.P.

IR
Francisco Coelho (IR)

Estado do projeto
Concluído

Título do projeto (em inglês)
JuPy | High Level Languages on HPC

Instituição proponente
Universidade de Évora

Financiamento total
185,00 €

Data de início　　　　**Duração** (meses)
21.01.2022　　　　　　　3

Principais objetivos do projeto que considera relevantes para esta candidatura

- Knowledge and experience was acquired about implementing and executing programs in a distributed HPC system.
- Technical and scientific cooperation relationships were established between the PI and the management team of the "Oblivion | HPCUE" cluster.

Ficheiros anexos

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Indicadores

Indicadores de realização previstos

Descrição	2024	2025	2026	Total
A · Publicações	0	0	0	
Livros	0	0	0	0
Capítulos de livros	0	0	0	0
Artigos em revistas internacionais	0	0	0	0
Artigos em revistas nacionais	0	0	0	0
B · Comunicações	0	0	0	
Comunicações em encontros nacionais	0	0	0	0
Comunicações em encontros científicos internacionais	0	3	3	6
C · Relatórios	0	2	0	2
D · Organização de seminários e conferências	0	0	0	0
E · Formação avançada	0	0	0	
Teses de Doutoramento	0	1	0	1
Teses de mestrado	0	0	0	0
Outras	0	0	0	0
F · Modelos	0	0	0	0
G · Aplicações computacionais	0	1	0	1
H · Instalações piloto	0	0	0	0
I · Protótipos laboratoriais	0	0	1	1
J · Patentes	0	0	0	0
K · Outros	0	0	0	
API documentation	0	1	0	1
Library documentation	0	1	1	2
	0	0	0	0

Divulgação

Ações de divulgação da atividade científica previstas no projeto

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Orçamento

Instituição proponente

Universidade de Évora

Rubrica	2024	2025	2026	Total
Recursos Humanos ⌄	0,00 €	0,00 €	0,00 €	0,00 €
Missões ⌄	0,00 €	0,00 €	0,00 €	0,00 €
Instrumentos e equipamento científico e técnico ⌄	0,00 €	0,00 €	0,00 €	0,00 €
Subcontratos ⌄	0,00 €	0,00 €	0,00 €	0,00 €
Registo de patentes ⌄	0,00 €	0,00 €	0,00 €	0,00 €
Demonstração, Promoção e Divulgação ⌄	0,00 €	0,00 €	0,00 €	0,00 €
Adaptação de edifícios e instalações ⌄	0,00 €	0,00 €	0,00 €	0,00 €
Aquisição de bens e serviços ⌄	0,00 €	0,00 €	0,00 €	0,00 €
Gastos gerais	0,00 €	0,00 €	0,00 €	0,00 €
Total	0,00 €	0,00 €	0,00 €	0,00 €

Orçamento global

Rubrica	2024	2025	2026	Total
Recursos Humanos	0,00 €	0,00 €	0,00 €	0,00 €
Missões	0,00 €	0,00 €	0,00 €	0,00 €
Instrumentos e equipamento científico e técnico	0,00 €	0,00 €	0,00 €	0,00 €
Subcontratos	0,00 €	0,00 €	0,00 €	0,00 €
Registo de patentes	0,00 €	0,00 €	0,00 €	0,00 €
Demonstração, Promoção e Divulgação	0,00 €	0,00 €	0,00 €	0,00 €
Adaptação de edifícios e instalações	0,00 €	0,00 €	0,00 €	0,00 €
Aquisição de bens e serviços	0,00 €	0,00 €	0,00 €	0,00 €
Gastos gerais	0,00 €	0,00 €	0,00 €	0,00 €
Total	0,00 €	0,00 €	0,00 €	0,00 €

Plano de financiamento

Rubrica	2024	2025	2026	Total
Financiamento FCT	0,00 €	0,00 €	0,00 €	0,00 €
Autofinanciamento	0,00 €	0,00 €	0,00 €	0,00 €