

Proposal number: 184940-051

Proposal name: Epistemic Logic for Distributed Monitoring

Proposal type: IRF - Postdoctoral Fellowship Proposal

1 Participants

1.1 Principal investigator(s)

ID number	2011833839
Name	Antonios Achilleos
E-mail	antonios@ru.is
Gender	Male
Academic degree	Doctorate /or equivalent
Position	Postdoctoral researcher
Institute	Reykjavik University-School of Computer science
Telephone	6179544

Requested wages			
Year	Number of man-months	Wages per month	Total Wages
2018	12.0	510	6120
2019	12.0	510	6120
2020	12.0	510	6120
Total	36.0		18360

Wages financed by others			
Year	Number of man-months	Wages per month	Total Wages
2018	0.0	0	0
2019	0.0	0	0
2020	0.0	0	0

Total	0.0		0
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Explain the source of wages financed by others

1.2 Upload attachment - CV principal investigator(s)

Filename	Antonis CV.pdf
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1.3 Upload attachment - Ph.D. certificate

Filename	achilleos_antonios_degrecertificate_2015-09-20.pdf
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1.4 Graduate student(s)

ID number	0
Name	
Gender	-- Nothing selected --
Current academic degree	Bachelorsdegree / or equivalent
Masters or Ph.D. study	Mastersdegree /or equivalent

Supervisor and institute
Supervisors: Professors Luca Aceto and Anna Ingólfssdóttir.
Institute: Reykjavik University

Start of study (year)	2019
End of study (year)	2020

Requested wages			
Year	Number of man-months	Wages per month	Total Wages
2018	0.0	0	0

the Icelandic Research Fund (IRF) 2018

2019	0.0	0	0
2020	7.0	350	2450
Total	7.0		2450

Wages financed by others			
Year	Number of man-months	Wages per month	Total Wages
2018	0.0	0	0.0
2019	0.0	0	0.0
2020	0.0	0	0.0
Total	0.0		0.0

Explain the source of wages financed by others
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1.5 Research assistant(s)

1.6 Other participant(s)

ID number	0207612459
Name	Luca Aceto
Gender	Male
Academic degree current	Doctorate /or equivalent
Position	Senior personnel 1 (e.g. full professor)
Institute	Reykjavik University-School of Computer science

Requested wages			
Year	Number of man-months	Wages per month	Total Wages
2018	0.0	0	0
2019	0.0	0	0

the Icelandic Research Fund (IRF) 2018

2020	0.0	0	0
Total	0.0		0

Wages financed by others			
Year	Number of man-months	Wages per month	Total Wages
2018	1.0	1000	1000.0
2019	1.0	1000	1000.0
2020	1.0	1000	1000.0
Total	3.0		3000.0

Explain the source of wages financed by others
Luca Aceto's salaries will be paid by Reykjavik University.

ID number	1802523989
Name	Anna Ingólfssdóttir
Gender	Female
Academic degree current	Doctorate /or equivalent
Position	Senior personnel 1 (e.g. full professor)
Institute	Reykjavik University-School of Computer science

Requested wages			
Year	Number of man-months	Wages per month	Total Wages
2018	0.0	0	0
2019	0.0	0	0
2020	0.0	0	0
Total	0.0		0

Wages financed by others			
Year	Number of man-months	Wages per month	Total Wages
2018	1.0	1000	1000.0
2019	1.0	1000	1000.0
2020	1.0	1000	1000.0
Total	3.0		3000.0

Explain the source of wages financed by others
Reykjavik University will pay Anna Ingólfssdóttir's salary.

ID number	0
Name	Adrian Francalanza
Gender	Male
Academic degree current	Doctorate /or equivalent
Position	Senior personnel 2 (e.g. associated professor)
Institute	Other
ID number institute/company	0
Institute/company	Computer Science, University of Malta

Requested wages			
Year	Number of man-months	Wages per month	Total Wages
2018	0.0	0	0
2019	0.0	0	0
2020	0.0	0	0
Total	0.0		0

Wages financed by others			
Year	Number of man-months	Wages per month	Total Wages
2018	1.0	335	335.0
2019	1.0	335	335.0
2020	1.0	335	335.0
Total	3.0		1005.0

Explain the source of wages financed by others
The University of Malta will pay Adrian Francalanza's salary.

1.7 Upload attachment - Letter of intent

Filename	AntonisIntent.pdf
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Filename	letter-of-intent.pdf
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1.8 Upload attachment - Host institute declaration

Filename	host_institute_declaration_2017-06-12.pdf
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2 Project

2.1 Project

Title in Icelandic	Þekkingarrökfræði fyrir dreifða vöktun
Title in English	Epistemic Logic for Distributed Monitoring
Expert panel	Engineering and technical sciences
Scientific category	Computer and information sciences
Is the proposal multidisciplinary?	No
Has the proposal previously been submitted to RANNIS?	no

Is the PI submitting more than one proposals to the fund for the grant year 2017?	No
Keyword Icelandic 1	Dreifð keyrslutímasannprófun
Keyword Icelandic 2	Þekkingarháttarrökfræði
Keyword Icelandic 3	Réttlætingarrökfræði
Keyword Icelandic 4	Neikvætt innsæi
Keyword Icelandic 5	Rökstuðningur
Keyword English 1	Distributed Runtime Verification
Keyword English 2	Epistemic Modal Logic
Keyword English 3	Justification Logic
Keyword English 4	Negative Introspection
Keyword English 5	Argumentation

2.2 Upload attachment - project description

Filename	project_desc.pdf
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2.3 Upload attachment - project description reference list

Filename	project_refs.pdf
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2.4 Abstract and Milestones

English
<p>Our goal for this project is to develop a framework for distributed runtime verification with monitor components that can detect, tolerate, and extract information from failures of the monitored system and the monitoring system itself. This framework will be based on a logic that combines muHML to describe desired system behavior; Epistemic Modal Logic to describe the system components' knowledge of the global configuration of the monitored system; Justification Logic to track evidence; Abstract Argumentation Theory to resolve conflicting information; and a component to keep track of the order of events. The resulting logic and its variations and counterparts will naturally raise computability and complexity questions with respect to their satisfiability</p>

and model-checking problems, which we intend to solve.
Icelandic
<p>Markmið okkar fyrir þetta verkefni er að þróa ramma um dreifða sannprófun á farartíma með skjárlutum sem geta greint, þolað og þykki upplýsingar frá bilunum á eftirlitskerfi og vöktunarkerfinu sjálfu. Þessi rammi byggist á rökfræði sem sameinar muHML til að lýsa viðkomandi kerfishegðun; Epistemic Modal Logic til að lýsa þekkingu kerfispáttanna á alþjóðlegu stillingum fylgst kerfisins; Rökfræði Rökfræði til að fylgjast með sönnunargögnum; Útdráttur rökgreiningarkenning til að leysa áreksaupplýsingar; Og hluti til að halda utan um röð atburða. Leiðréttingin og afbrigði þess og hliðstæða munu náttúrulega hækka reikningshæfni og margbreytileika með tilliti til fullnægjandi og fyrirmyndaraðgerða, sem við ætlum að leysa.</p>
Milestones (1st year)
A framework for distributed RV with monitors that detect faults of the monitoring system and track the time, using Epistemic Modal Logic.
Milestones (2nd year)
<p>A framework for distributed RV, based on Epistemic Modal Logic, Justification Logic, and a simple form of Argumentation, with monitors that can handle failures and inconsistent information.</p> <p>Decidability and complexity results for the resulting logics.</p> <p>Identification of suitable fragments.</p>
Milestones (3rd year)
A full framework for distributed RV, based on Epistemic Modal Logic, Justification Logic, and Argumentation Theory, optimal under reasonable criteria.

Development of a prototype tool.

2.5 Non-preferred reviewer(s)

3 Cost and financing

3.1 Project accounting

ID number institute/company	5101054190
Institute/company	Reykjavik University-School of Computer science
Person responsible	Anna Lára Gísladóttir
E-mail	annal@ru.is

3.2 Operational expenses

3.3 Contracted services

3.4 Travel expenses

Year	Requested (in thousand ISK)
2018	1060
2019	1060
2020	1060
Total:	3180

Year	Other financing (in thousand ISK)
2018	0
2019	0
2020	0
Total:	0

Detailed explanation of cost
Year 1: two trips to Malta, estimated at 230K each, to collaborate with Adrian Francalanza, and three trips to attend conferences, estimated at 200K each.

Year 2: two trips to Malta, estimated at 230K each, to collaborate with Adrian Francalanza, and three trips to attend conferences, estimated at 200K each.

Year 3: two trips to Malta, estimated at 230K each, to collaborate with Adrian Francalanza, and three trips to attend conferences, estimated at 200K each.

3.5 Upload attachment(s) - price quote

3.6 Overhead

Year	Requested overhead (in thousand ISK)
2018	1795
2019	1795
2020	2407
Total:	5997

Detailed explanation of cost
<p>According to calculations by the RU Finance Department, the overhead and facilities in research as a percentage of salary cost is around 80% at RU. Unfortunately, the application form does not allow filling in other financing of the overhead. In the calculation by the RU Finance Department the following support units and expenditures are used in the calculation:</p> <ul style="list-style-type: none"> • Support Services (housing, stationery and paper, management and other services) • Library (library, management and other services) • IT department (operation, maintenance and computer cost and other equipment) • Administration and finance (management, accounting and financial transactions)

The other financing by Reykjavik University is therefore in reality much higher than the budget plan for the project period in the application form reveals.

3.7 Budget plan for the project period

Cost item	Requested funding	Other financing	Total
Wages	6120	2335	8455
Operational expenses	0	0	0
Contracted services	0	0	0
Travel expenses	1060	0	1060
Total 2018	7180	2335	9515
Overhead	1795	0	1795
Total cost including overhead	8975	2335	11310
Wages	6120	2335	8455
Operational expenses	0	0	0
Contracted services	0	0	0
Travel expenses	1060	0	1060
Total 2019	7180	2335	9515
Overhead	1795	0	1795
Total cost including overhead	8975	2335	11310
Wages	8570	2335	10905
Operational expenses	0	0	0
Contracted	0	0	0

services			
Travel expenses	1060	0	1060
Total 2020	9630	2335	11965
Overhead	2407	0	2407
Total cost including overhead	12037	2335	14372
Publication cost	0	0	0
Total overhead	5997	0	5997
Total cost of project excluding overhead	23990	7005	30995
Total cost of project including overhead	29987	7005	36992