

Executive meeting - November Update

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Thu 3/11/2022 2:41 PM

To: optima-executive@lists.unimelb.edu.au <optima-executive@lists.unimelb.edu.au>

Cc: Sharon Aburn <sharon.aburn@monash.edu>

 3 attachments (586 KB)

2022 OPTIMA Climate Survey v2.docx; 2022 OPTIMA Annual Meeting Agenda.docx; 2022 OPTIMA Launch Order of Proceedings.docx;

Hello OPTIMA Exec

Please find the update below in lieu of a November Meeting and the actions needed. Comments or feedback for addition to the minutes are welcomed.

Action needed by 4th November - Climate Survey feedback on questions if you have any.

Action needed by 7th November - Order Of Proceedings - Optima Launch; feedback if you have any.

Action needed by 7th November Agenda – Optima Annual Meeting; feedback if you have any.

Action needed by Dec Exec Meeting - AI nomination. See below. Ali will be speaking at the AI-OPT on 17/18 Nov, and I will reserve feedback until the next Exec meeting.

Action needed by Dec Exec Meeting – advise on best timeslot in 2023 for the OPTIMA Exec Meetings. Two-hour timeslot. Is Friday 10am – 12pm on the first Friday of the month still the best for you? In 2023 the first Exec will be in February.

Updates:

1. ARC meeting to discuss incoming POs and use of remaining stipends (in attendance ARC including Liz Visher, CH, KSM, PS)

We must try and use all the remaining ARC scholarships as soon as possible and before using university stipends. We can look at leveraging other types of connections to industry, such as using linkage grants or arranging short-term contracts, but this should come after we have used the ARC stipends. We could request that one or two stipends be converted towards initiatives for the PhDs (Note: We are already converting one ARC stipend that was earmarked for Monash). We can apply for a variation to turn one or two ARC stipends into master's projects. We should consider that the Centre will run an extra year as most Centres starting during the pandemic will get an extension. We need to budget for this i.e. salaries. Liz Visher has suggested that for new Partner Orgs, we don't need them to sign the same agreement as existing Partner Orgs. We can prepare an accompanying letter that outlines legalities specific to incoming POs (Note: CH has contacted the research office to confirm this and asked for a template). This process will be easier than the current process.

2. ARC stipend - As previously agreed by the OPTIMA Exec, CH has requested Monash release one ARC stipend to fill scholarship gaps. CH waiting on response.
3. Student exchange - ZIB and IMORE ITALY, CH has contacted the research office to start the paperwork. CH waiting on response.
4. CI paperwork for Ariel is with the ARC, and we expect their agreement shortly.
5. Students-A student for the DST project has been selected. They will be supervised by Ellie, Andres Munoz and Michael Kirley and enrolled in UoM Faculty of Engineering. They have applied for a UoM stipend. We are still seeking a student for ENGIE.
6. E&T - this month, we are running MiniZinc Training at Monash and Social Media Training at Monash in collaboration with ITTC CTET. Last month we ran training Version Control/GIT and How to pitch your PhD.
7. Theme leader update

ADVANCE (Andreas and Alysso) Plans for 2023

- Hold a tutorial-style session as part of the student conference next year on one of the topics within the "Advance" area to meet goals 1.1c and 1.2c
- Encourage all members of OPTIMA to attend the Maths in Industry Study Group early next year as a small test case for whether members of OPTIMA can work together on a small project to create some interdisciplinary solutions.

INTEGRATE - GT to provide an update at the Centre Annual Meeting

UPTAKE - AP to provide an update at the Centre Annual Meeting

Attachment AI nomination

A: Who is nominating?

Are you nominating yourself or someone else?

Self nominated - go to section B

Your name (nominator):

Please enter

B: Nomination details

Title

Please enter

First name

Ali

Surname

Jamali

Nominee's affiliation i.e. university/school

kyungpook National University

Nominee's email

jamali.a@gmail.com

C: Statement of support

The nominee's current role in OPTIMA is:

- None of the above

Please provide details of how you currently support OPTIMA or how you intend to collaborate with OPTIMA.

Developing a toolbox for the optimal design of Real Complex systems

For any optimization process of real systems, a near to exact mathematical model is needed. The mathematical model is a representation of the real system and helps us to predict the behavior of the system based on computer simulation. Mathematical models are often inaccurate either because of ignored phenomena such as friction and linearization or inherent inaccuracy because of uncertain/unknown phenomena.

The obtained results of such modeling do not have enough details to implement directly in the real systems. To tackle these issues, commercial software such as ADAMS can be employed for the modeling and simulation of real complex systems.

ADAMS is a well-known software for the simulation and validation of dynamical systems and rechecking of a mathematical model. In the ADAMS, there are no powerful tools for optimum design. We recently developed an Opti-ADAMS toolbox based on developing an optimization code that is written in C language and compiled into a library (GA.dll) for use in ADAMS/View. We are able to employ this package for the optimum design of a wide range of real industrial problems. In other words, we made a parametric near-to-real model of a complex system in ADAMS without needing to have a mathematical model or governing dynamic equations of the system. The optimizer toolbox is then employed to optimally find the parameters of the model that has been made in ADAMS.

My proposal is to extend this toolbox for the optimal design of a wide range of real industrial problems and employed more advanced tools for optimum design such as genetic programming, Game theory, reinforcement learning, and, so on.

It is worth noting that I have employed this toolbox for the optimal design of two industrial projects including the optimal design of a Boat hoist and the optimum design of a real vehicle suspension system. The published manuscript related to the optimum design of the suspension system can be found here, <https://journals.sagepub.com/doi/abs/10.1177/10775463211026036>

Provide link to publications here.

<https://scholar.google.com/citations?user=fnZvyb4AAAAJ&hl=en>

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Please note: Mon, Tue and Fri I finish work at 3 pm.



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