Master Thesis:

Modeling of ATFM problem as a dynamic system in ATM

Task Description:

Along with other leading research institutes in ATM, at *DLR-Lufttransportsysteme*, experts are working in close collaboration with industry partners (SESAR 2020) to develop practical solutions and tools. There is a chance for interested applicants to not only scientifically contribute to these ongoing projects but to get introduced to practical aspects of ATM. Based on NFE solution (Network Flow Environment: Matlab coded Model for ATFM problem) new features are planned to incorporate new OR approaches in optimization model. This study will contribute to investigating 2 different approaches in implementation of dynamic programming in ATFM. The importance of this is even more appreciated in terms of Rolling Horizon concept in NFE. More specifically the person appointed will join the ATFM team to focus on a work package covering the following tasks:

- Literature Review on ATFM Problem and Flight Planning,
- Introduction to recent Scientific papers on dynamic programming in ATM (Deterministic),
- Problem definition based on network representation of ATFM,
- Mathematical formulation of ATFM problem (Dynamic Programming+ ILP),
- Publishing the results as paper(s),
- Discussion of future work and documentation.

Requirements:

- Studies in Air Transportation & Traffic Eng. / Industrial Eng. /Operations Research etc. ,
- Motivation and ability to work independently and collaboratively,
- Good programming skills (preferably Matlab or Python),
- Knowledge sharing and Reporting abilities,
- High working knowledge of English.

Beneficiary points:

- Record of published papers,
- Good academic records,
- Background in ATM,
- Statement of Purpose / Motivation Letter.

Deadline: *until position filled*

Duration: *Maximum 6 months*

Contact:

(Please quote 'ATFMRES2' on all correspondence)

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