Literature review papers and docs: <https://1drv.ms/u/s!AsEr9HXe_2HVhaBXVU44mADVyipu6w?e=cW7zKY>

Color code for tasks breakdown:

Green - Bilal

Red - Braden

Blue - Shared/Common

Items needed for stage I:

1. Simple test case of a very flexible structure with both distributed and concentrated masses (possibly a uniform beam)
2. Test case (load cases) definition for the simple test definition
3. Definition of a method (code) to do the random ‘mistuning’ of the model
4. Discussion and decisions on codes (OpenMADO, SciPy, SOL200 etc) to be used to investigate the model updating process
5. Problem definition - objective functions/constraints
6. Debugging
7. Preliminary results

End of stage I - 31st Sept. 2020

At this stage, involve Cesnik in the discussion and have a 5-10 page ‘abstract’ written with a description of

1. Introduction and literature review
2. Description of methodology
3. Algorithm and test case
4. Preliminary results
5. Future (for a paper) work

Timeline:

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| --- | --- | --- | --- |
| Timeline (week) | Task content | Milestone and progress | References and learning materials |
| 1 | Create model .bdf in NASTRAN (this includes the distributed mass and stiffness along with an agreed upon number of conc. mass)  Define load cases (as a factor of self weight - g)  Create random mistuning script  Lit review | Input file created and readily available for a simple beam model  Load cases available as a separate input file and can be run individually and altogether (subcases in SOL400 card) | Nastran Quick Reference |
| 2 | Investigate SOL200  Investigate OpenMDAO, SciPy  Lit review | Defined process for how the problem is solved  Code selected for future studies |  |
| 3 | Add intro and methodology in the overleaf document (at least 2-3 pages of lit review) and a flow chart describing the algorithm and objective functions/constraints  Inputs and outputs to the agreed upon optimizer code. Data organization, data formatting etc. | Methodology and process ready for running the problem with the beam example |  |
| 4-5 | Debug and run optimization for beam problem for different load cases | Sample results. Check if initial hypothesis holds and original properties are recovered  Engage Cesnik (or higher powers) in the conversation to see their opinion/critique |  |
| 7-8 |  |  |  |
| 9-10 |  |  |  |
| 11-12 |  |  |  |
| 13-14 |  |  |  |