Diary Bullet Points and Information:

Week 1 – January 6th to 10th

- Training
    - HR stuff
    - Understanding the company
    - Meeting interns
    - Engineering skills
    - Analysis skills
    - Lab practical work
    - JMP and stats training

Week 2 – January 13th to 17th

- Training & Ansys Fluent Upskilling
    - Ansys first time
    - Working in SpaceClaim
    - Development of different models
        - Vortex simulations
        - Filtration systems
        - VOF to DPM
        - Particle tracking
- Meeting with supervisor regarding work and potential areas to go into
    - Previous experience in modelling
    - Work in the max planck
    - Discussion of what to do
        - RStudio work on the WebApps
        - Python Work with CFD engineer for the improvement of processes
        - Modelling with Ansys
        - Modelling with SpaceClaim

Week 3 – January 20th to 24th

- Ansys Fluent and R Upskilling
    - VOF to DPM work
    - Improving Documentation that exists
    - Addition of new tutorials
- R Upskilling
    - Analysis of the WebApps

Week 4 – January 27th to 31st

- Modelling Tech Updates
    - Brining Plotly into use in the company over Esquisse

- Beginning of the WebApp Auditing
    - Working on Large and Small molecule upscaling
    - Centrifugation
    - Cores of Shiny and RStudio

Week 5 – February 3rd to 7th

- Building model for the OptiMax reactor parts
    - Determining the pitch
    - Number of turns
    - Screw dimensions
- Continuing webapp auditing
    - Finishing Large and Small molecule upscaling – fixed issue with reactivity by improving requirements, focus on renaming the variables and improving the documentation for explanations
    - Building a script for automatic email systems using Microsoft365R and sendmailR – ultimately failed due to SMTP security concerns

Week 6 – February 10th to 14th

- Continuing the Ansys fluent documentation and assisting with a fluent problem to do with a syringe pump and fluctuating pressures in a system by moving the inlet in the reactor
- Building an animation creator to convert JPEGs and PNGs from Ansys fluent to .mp4 formats using offline systems and bypassing FFMEPG dependencies
- Building a wordcloud generator for the "BeYou" team to which can identify synonyms and group words together to assist with International Womens Day activities

Week 7 – February 17th to 21st

- Grandmother died so wasn't in work

Week 8 – February 24th to 28th

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Week 9 – March 3rd to March 7th

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Week 10 - 10th March to 14th March

- Continued the WebApp Audit
    - Finished Plaque assay
    - NTA
    - Equivalence testing

- Redoing the printing chemistry equipment via Ansys to ensure correct configurations for the printing process

Week 11 - 17th March to 21st March

- Development of the Bayesian Optimisation DOE concept
- Foundations of the WebApp for Bayesian
- Manging Conda environments, YML files, GitHub cloning
- Testing of the Bayesian Concepts for DOE
    - Major reductions in experiments
    - Improvements in computation time
    - Development of test cases
- Opening up to advanced signal deconvolution using machine learning techniques
- Finalising the model for printing the chemistry equipment and beginning the printing process with an exterior company

Week 12- 24th March to 28th March

- Presenting the Bayesian Optimisation App
- Beginning upscaling project for client with the development of Geometry, having kick off meetings and developing the simulation plans
- Improving the application of the Bayesian Optimisation, opening up to new surrogate and acquisition models, potential for moving into Fourier transform based models
- Researching into automating GC-MS using neural networks couple with NIST libraries and advanced signal deconvolution techniques
- NIBRT career fair

Week 13 - 31st March to April 4th

- Finishing Bayesian Optimisation App and troubleshooting designs
- Testing Multi Optimisation for CFD grid designs and applications
- Developing benchmarks for analysis of Bayesian model configuration for different applications
- Richardsons extrapolation for CFD analysis with Bayesian model
- Running CFD for velocity contours, Vortex analysis and COV mixing time determinations