Meetings & Presentations

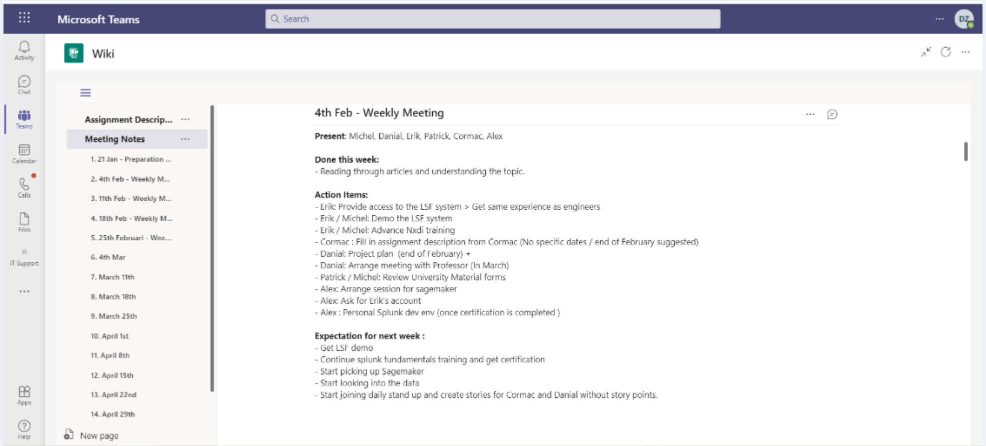
June 2021
NXP Internship

Danial Zarei

Fontys University of Applied Sciences

INTRODUCTION

Below you can find a few snapshots of the meetings notes recorded by me on a weekly basis. This helped us to work on a better structure and it was efficient to pick up where we left every week to maximize our productivity.



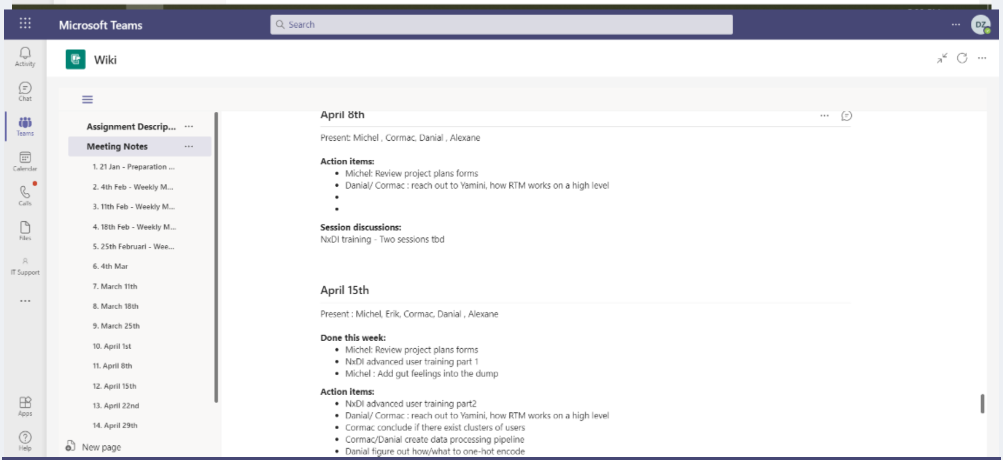
4th Feb - Weekly Meeting

Present: Michel, Danial, Erik, Patrick, Cormac, Alex

Done this week:
- Reading through articles and understanding the topic.

Action Items:
- Erik: Provide access to the LSF system > Get same experience as engineers
- Erik / Michel: Demo the LSF system
- Erik / Michel: Advance Nxdi training
- Cormac : Fill in assignment description from Cormac (No specific dates / end of February suggested)
- Danial: Project plan (end of February) +
- Danial: Arrange meeting with Professor (In March)
- Patrick / Michel: Review University Material forms
- Alex: Arrange session for sagemaker
- Alex: Ask for Erik's account
- Alex : Personal Splunk dev env (once certification is completed)

Expectation for next week :
- Get LSF demo
- Continue splunk fundamentals training and get certification
- Start picking up Sagemaker
- Start looking into the data
- Start joining daily stand up and create stories for Cormac and Danial without story points.



April 8th

Present: Michel , Cormac, Danial , Alexane

Action items:
- Michel: Review project plans forms
- Danial/ Cormac : reach out to Yamini, how RTM works on a high level
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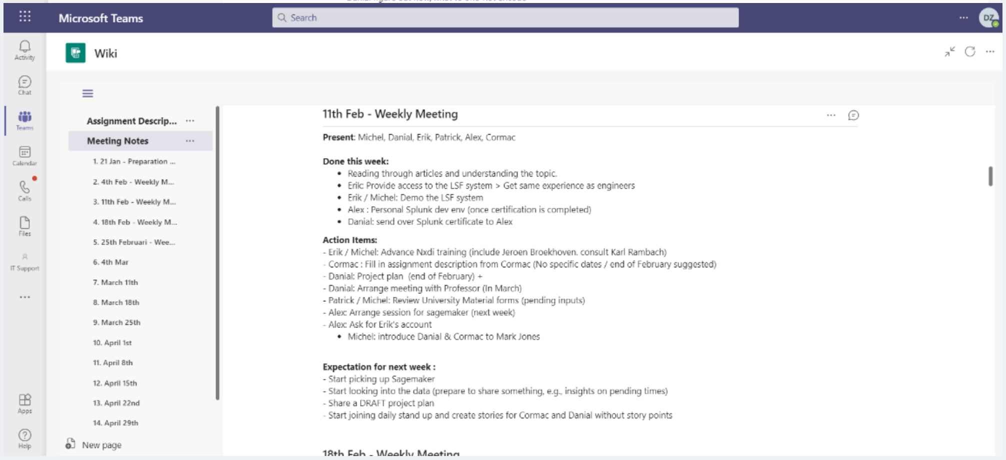
Session discussions:
NxDI training - Two sessions tbd

April 15th

Present : Michel, Erik, Cormac, Danial , Alexane

Done this week:
- Michel: Review project plans forms
- NxDI advanced user training part 1
- Michel : Add gut feelings into the dump

Action items:
- NxDI advanced user training part2
- Danial/ Cormac : reach out to Yamini, how RTM works on a high level
- Cormac conclude if there exist clusters of users
- Cormac/Danial create data processing pipeline
- Danial figure out how/what to one-hot encode



11th Feb - Weekly Meeting

Present: Michel, Danial, Erik, Patrick, Alex, Cormac

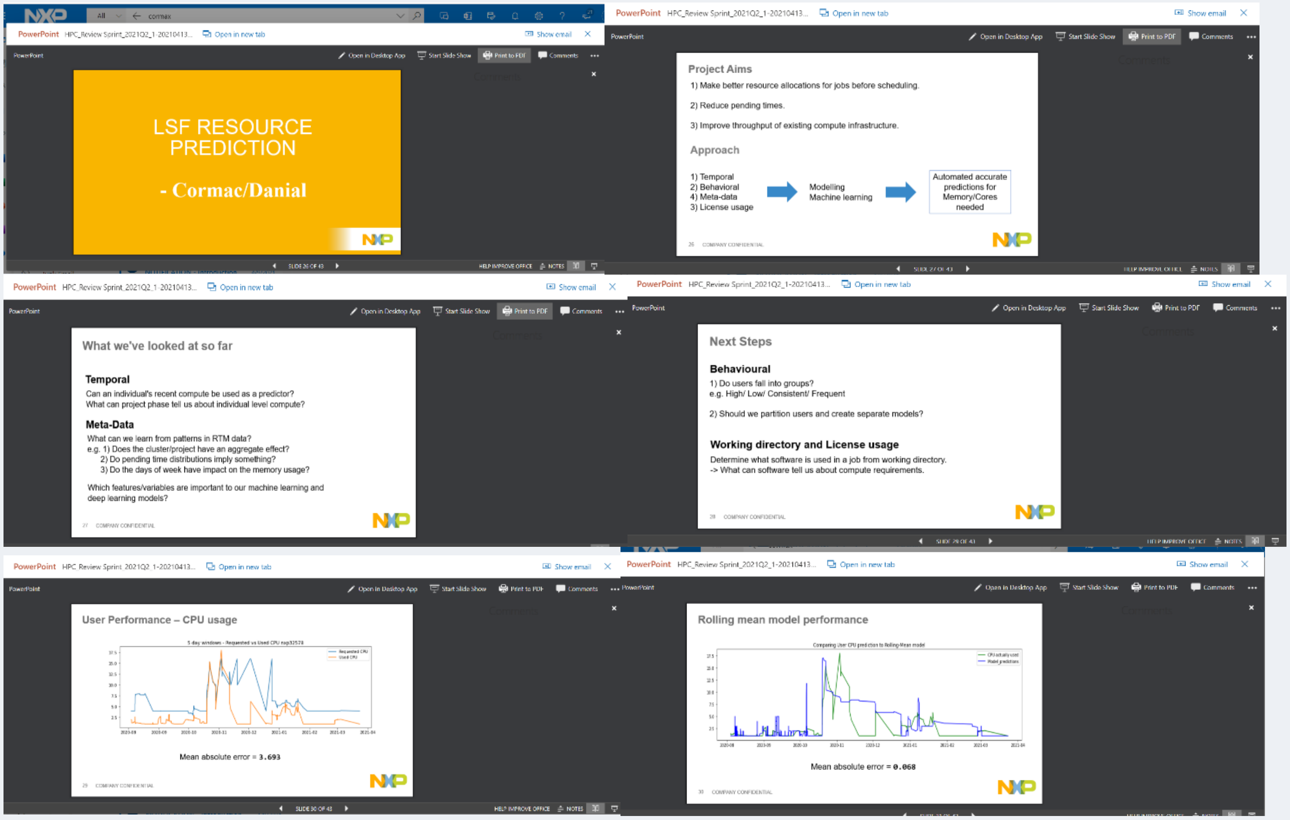
Done this week:
- Reading through articles and understanding the topic.
- Erik: Provide access to the LSF system > Get same experience as engineers
- Erik / Michel: Demo the LSF system
- Alex : Personal Splunk dev env (once certification is completed)
- Danial: send over Splunk certificate to Alex

Action Items:
- Erik / Michel: Advance Nxdi training (include Jeroen Broekhoven. consult Karl Rambach)
- Cormac : Fill in assignment description from Cormac (No specific dates / end of February suggested)
- Danial: Project plan (end of February) +
- Danial: Arrange meeting with Professor (In March)
- Patrick / Michel: Review University Material forms (pending inputs)
- Alex: Arrange session for sagemaker (next week)
- Alex: Ask for Erik's account
    - Michel: introduce Danial & Cormac to Mark Jones

Expectation for next week :
- Start picking up Sagemaker
- Start looking into the data (prepare to share something, e.g., insights on pending times)
- Share a DRAFT project plan
- Start joining daily stand up and create stories for Cormac and Danial without story points

18th Feb - Weekly Meeting

Furthermore, I’ve given a presentation to the HPC team (around 90 people) on our project and progress. Unfortunately, I’m not allowed to share a link to the PowerPoint slide itself, but I can show some snapshots of our slides. Below you can find these slides. During this presentation, I’ve talked about what is the project goal, and our approach to the problem. We’ve talked about a few main and sub questions to engage the audience, what our next steps are and finally some result on predicting CPU-usage on a user level with rolling window average.



LSF RESOURCE PREDICTION

- Cormac/Danial

Project Aims

1) Make better resource allocations for jobs before scheduling.

2) Reduce pending times.

3) Improve throughput of existing compute infrastructure.

Approach

1) Temporal
2) Behavioral
4) Meta-data
3) License usage

Modelling
Machine learning

Automated accurate predictions for Memory/Cores needed

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What we've looked at so far

Temporal

Can an individual's recent compute be used as a predictor?
What can project phase tell us about individual level compute?

Meta-Data

What can we learn from patterns in RTM data?
e.g. 1) Does the cluster/project have an aggregate effect?
2) Do pending time distributions imply something?
3) Do the days of week have impact on the memory usage?

Which features/variables are important to our machine learning and deep learning models?

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Next Steps

Behavioural

1) Do users fall into groups?
e.g. High/ Low/ Consistent/ Frequent

2) Should we partition users and create separate models?

Working directory and License usage

Determine what software is used in a job from working directory.
-> What can software tell us about compute requirements.

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User Performance – CPU usage

Mean absolute error = 3.693

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Rolling mean model performance

Mean absolute error = 0.068

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The End...