ML2 vs ML ++ - Questionnaire

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1 Background

1.1 Educational Level

- ☐ High School or equivalent
- ☐ Vocational/Technical Training
- ☐ Professional Bachelor's Degree
- ☐ Bachelor's Degree
- ☐ Master's Degree
- ☐ Doctorate
- ☐ Other: _____

1.2 Technical Background

- ☐ IoT/CPS System Developer
- ☐ Embedded Software engineer
- ☐ Data Scientist / ML engineer
- ☐ Educator
- ☐ Software Architect
- ☐ Software Engineer backend/front-end/full-stack
- ☐ Other: _____

1.3 Self Rated Experience

	Beg.	Inter.	Adv.	Expert
IoT/CPS development	☐	☐	☐	☐
Model-Driven Eng.	☐	☐	☐	☐
ML/ Data-science	☐	☐	☐	☐

1.4 Prior Experience

Have you used this type of software before?

2 Questionnaire

Select the software version: Manual (M) or Graphical (G). Questions with a letter apply only to that software version.

2.1 Time Efficiency

Design How much time did you spend designing the use cases?

Implementation How much time did you spend implementing the use cases?

2.2 Functionality

Successfull Implementation Do you think you were able to complete the use cases successfully?

- None ☐ Partially☐ Completely☐

Ease of use: DSL How easy was it to define model instances?

- Data types & Objects: Easy ☐ Moderate☐ Hard☐
- Fragments & Messages: Easy ☐ Moderate☐ Hard☐
- Things: Easy ☐ Moderate☐ Hard☐
  - Ports: Easy ☐ Moderate☐ Hard☐
  - Properties: Easy ☐ Moderate☐ Hard☐
  - Behaviour: Easy ☐ Moderate☐ Hard☐
  - Data Analytics: Easy ☐ Moderate☐ Hard☐
- Configuration: Easy ☐ Moderate☐ Hard☐

Ease of use: ML

- Data preprocessing: Difficult ☐ Moderate ☐ Easy ☐
- Model training: Difficult ☐ Moderate ☐ Easy ☐
- Model evaluation: Difficult ☐ Moderate ☐ Easy ☐

Code Quality How would you rate the written python code or generated python code?

Broken Features Which of th existing features do you feel need to be worked on?

Missing Features Do you feel like there are missing features?

2.3 Learning Curve

Learning How much time did you think was needed to be comfortable to use the software?

Learning How easy was it to learn the software?

- Easy ☐ Moderate☐ Hard☐

Intuitivity How intuitive was it to use the software?

Unintuitivity Which part of the software or workflow was the hardest to learn?

LoC Python (M) How many lines of python code did you write?

LoC DSL (M) How many lines of ML-Quadrat code did you write?

2.4 Error Handling and Debugging

Error Rate How many errors did you encounter when implementing the use cases?

Error Description Did the software provide clear error messages?

- Not Clear ☐ Moderately Clear☐ Very Clear☐

Debugging Time How long did it take to resolve these issues?

Debugging Effort How difficult was it to resolve these issues?

- Easy ☐ Moderate☐ Hard☐

2.5 User Satisfaction

Overall Satisfaction How satisfied are you with the workflow?

- Dissatisfied ☐ Neutral ☐ Satisfied ☐

Feature Satisfaction (G)

- Plot Generation: Dissatisfied ☐ Neutral ☐ Satisfied ☐
- Metric Generation: Dissatisfied ☐ Neutral ☐ Satisfied ☐
- GUI: Dissatisfied ☐ Neutral ☐ Satisfied ☐

Favourite Features What was your favourite feature of the software?

Least Favourite Feature What was your least favourite feature of the software?

Extra Feature If you could add your own feature, what would you add to the software?

References