SYSEN 6150: Model Based Systems Engineering

Customer Affinity Process, Design Review Reaction, Annotated Concept Sketch

Nick Kunz [NetID: nhk37] nhk37@cornell.edu

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Customer Affinity Process

The following exhibits a Customer Affinity Process for the core development of PyTorch. PyTorch is an open source machine learning framework for experimential use and production. Below are 10 brief examples of user/customer requests that have been labeled according to their use within *production*. In the case where more examples of user/customer requests were included, an additional label would likely emerge containing features related to *experiments*, where an even broader label would likely emerge to combine them.

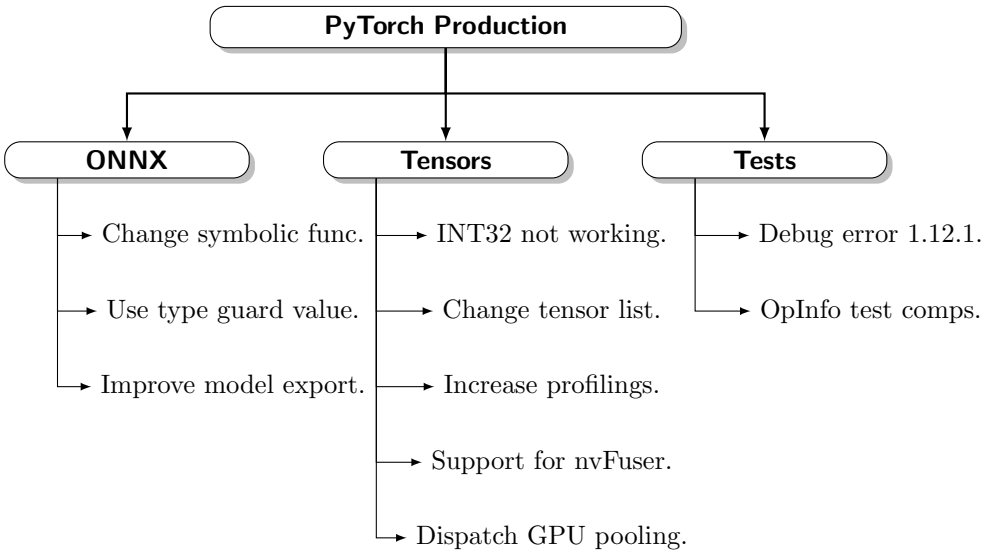

Figure 1: Customer Affinity Process

Design Review Reaction

Mindstorm Robotics Challenge: Team 2 (Alphaverse)

On Wednesday, August 31th, 2022 at 11:00AM EST, Team 2 (Alphaverse), conducted a design review for the Mindstorm Robotics Challenge. The team was represented by Amal Bhaskaran, under the supervision of the assumed *"boss"*, David R. Schneider.

The team revealed several strengths and weaknesses during the conversation. The two main strengths were: 1) they had implemented intermediate deadlines nested within the broader project completion time, and 2) they were open to both structural and functional critique and welcomed feedback if it meant that it would help solve the customers problem.

Although the project demonstrated a clear direction, the team still had ways in which they could improve. The two main weaknesses they exhibited were: 1) they recast the problem into a solution too quickly - that is to say, the team relied too heavily on structural explanations and quickly arrived at a solution, rather than first addressing the customer's functional requirements, and 2) they lacked a baseline of performance halfway through the development cycle.

At this time, it seems like the team would benefit most from continuing their practice and development of intermediate deadlines and being open to feedback from the customer and leadership, while at the same time revisiting many of the functional concerns of the customer to ensure that their structural solutions met those requirements. In addition, it would be beneficial for the team to conduct a number of tests to establish a baseline of performance that they could improve upon in what time they still have to develop their robot.

Annotated Concept Sketch

The following exhibits both *structural* and *functional* annototated concept sketches for a Fortin Barometer. A Fortin Barometer measures atmospheric pressure utilizing a column of mercury. Below are 6 features of the instrument, each outlined according to their respective categories.

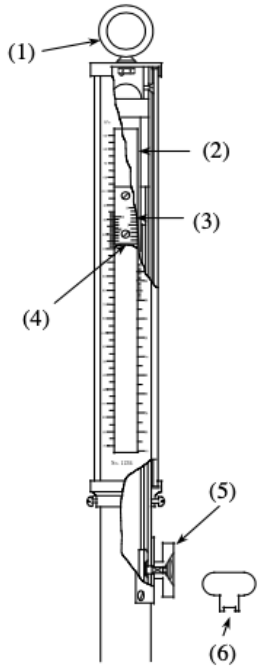

Figure 2: Fortin Barometer (1)

Figure 2: Structural Annotations

1. External grasping ring.
2. Extended pressure scale.
3. Scale containing multiple measurements.
4. Extra wide mercury column.
5. Calibration knob.
6. Rough adjustment tool.

Figure 2: Functional Annotations

1. Fastener for suspending device from a fixed position.
2. Device can measure high increases in pressure.
3. Pressure can be read in either hPa or atm.
4. Easy to read and record measurements.
5. Easy to calibrate in the field.
6. Prevent rough tuning from fielded device.

References

1. World Meteorological Organization (WMO), "Figure 5.2: Structure of the Fortin Barometer," *in Chapter 5: Measurement of Atmospheric Pressure, WMO Training Workshop for RA II Instrument Specialists.* Tsukuba, Japan: Japan Meteorological Agency (JMA), 1998, pp. 2.