Applying AI to Agile Processes

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What is Agile Methodology?

- Agile methodology is a project management framework that breaks projects down into several **dynamic phases**. These phases are known as **sprints**.

- A sprint is one **timeboxed iteration** of a continuous development cycle. Within a Sprint, the planned number of **user stories** must be **completed.**

- A user story captures a description of a feature from an end-user perspective. In other words, helps to create a **simplified illustration of a requirement**. A user story describes the **type of user**, **what** they want and **why**.

What is AI?

- AI consists of Software Code
- AI is based on calculus equations
- AI can learn by creating data models which uses as a reference
- Learning can be supervised, unsupervised, or reinforcement

Getting Started with AI

- Gather and assess the project data
  - Volume, structure, relevance
- Perform data analytics
  - Identify additional data to collect
  - Adjust project process based on insights
- Identify where AI can improve project success
  - Prediction/Classification

AI Methods

Natural Language Processing (NLP)

NLP is a computational method for the automated analysis and **representation of human language**. The use of NLP for software engineering tasks has become popular with the increasing volume of data from software artifacts.

AI Methods

Sentiment Analysis

Customer sentiment analysis involves collecting, analyzing, and leveraging data to understand **how customers feel**. It helps to understand user perception towards a particular feature, product, or even an industry.

Costumer Requirements & Sentiment Analysis

Customer requirements can be checked and **predicted if they will be successful by using AI tools** that are using **sentiment analysis** or historical data to **find out what scope and functionality the customer is attached to.**

Types of Customer Sentiment Analysis

- **Fine-grained**

This model allows to perform a sentiment analysis across 5 different polarity categories: very negative, negative, neutral, positive, and very positive.

- **Aspect-based**

Aspect-based analysis digs deeper. It aids in identifying the specific topics that people are discussing.

- **Emotion detection**

This model helps to identify emotions such as sadness, anxiety, anger, frustration, and happiness. Usually, emotion detection systems use lists of words or phrases that express certain emotions called lexicons.

- **Intent analysis**

The intent analysis model aids in determining whether an individual is intending to make a purchase or is merely looking around.

User stories & Natural Language Processing (NLP)

The user story components consist of the following elements:

- Role: abstract behavior of actors in the system context; the aspect of “who”;
- Goal: a condition desired by stakeholders; the aspect of “what”;
- Task: specific things that must be done to achieve goals; the aspect of “why” ;
- Capability: the ability of actors to achieve goals based on certain conditions and events; the set of aspects of “who”, “what”, and “why”.

Examples of formats/templates are usually used:

- As a <aspect of who>, I want/need/can <aspect of what>, so that <aspect of why>;

Uses Of NLP For User Stories

NLP can be used to achieve the following primary goals in the context of User Stories:

- Discovering defects:
  - Providing recommendations on incomplete requirements
  - Identifying ambiguous user stories
  - Defining and measuring quality factors from user stories
  - Obtaining a security defect reporting form from the user stories
  - Indicating duplications between user stories
- Generating a model/artifact
- Identifying the key abstractions
- Tracing links between model/natural language requirements
- Predicting User Stories estimation

AI & Sprints Success

- There are AI tools that help to organize and plan sprints better by allowing us to **predict future sprints** based on **previous sprints**. Predictive models can also used for the planned workflows (team's retrospectives), and this gives us a pre-cognizant view of the possible outcomes.

- AI also contributes to Sprint's success through real-time constant project oversight. This helps to **mitigate risks** using predictive analytics. AI can pull apart the friction points of each sprint and use them to develop a **risk management protocol.**

Respective Tools

- **Sentiment Analysis Tools:** MonkeyLearn, Lexalytics, Brandwatch, Social Searcher, MeaningCloud, Aylien

- **NLP tools:** User Story Artisan, SpaCy, NLTK, word2vec, WordNet, LingPipe Toolkit, PropBank, TreeTagger, Stanford POS tagger

Benefits & Challenges

BETTER PROJECT PLANNING

BETTER RISK MANAGEMENT

ACCURACY?

Q&A