**Sprint-3**

**Introduction**

In this Sprint, the purpose was to develop code for student GNN and distillation and Inference wrapper. The following sections contain the user stories I worked on with a detailed description of the tasks I worked on:

**User Stories**

I worked on the following User Stories:

[**GNN: DishFT-GNN: Future-Aware Distillation GNN #595**](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/595)

**Conditions of Satisfiability:**

* Correctness: Adjacency shapes and edge thresholds are validated.
* Performance: Teacher & student training complete without errors; student inference meets latency target.
* Robustness: Pipeline handles missing days or low-volatility periods gracefully.
* Integration: Crew AI agent consistently applies probability rules to emit valid recommendations.

**Definition of Done:**

* Price data loader and returns matrix are implemented and tested.
* Correlation-based graph builder produces correct adjacency tensors.
* Teacher GNN architecture, training loop, and checkpoints are in place.
* Student GNN with distillation loss trains and is serialized.
* Inference script loads student model and emits the required JSON.
* Crew AI decision agent is configured and returns correct BUY/SELL/HOLD payload.
* End-to-end integration test passes under performance requirements.

**Tasks**

[GNN.1 Price & Returns Ingestion (8 ph) #596](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/596)

[GNN.2 Graph Construction (9 ph) #615](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/615)

[GNN.3 Teacher GNN Development (9 ph) #713](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/713)

[GNN.4 Student GNN & Distillation (7 ph) #714](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/714)

[GNN.5 Inference Wrapper (6 ph) #715](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/715)

[GNN.6 Crew AI Integration (4 ph) #716](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/716)

[GNN.7 Validation & Testing (7 ph) #717](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/717)

[GNN.8 Backtesting & Evaluation (11 ph) #718](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/718)

**Tasks I Worked On**

[GNN.4 Student GNN & Distillation (7 ph) #714](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/714)

I cloned teacher architecture and defined distillation loss and trained, monitored the performance and serialize the model. The task was estimated at 7 person hours but it took me 20 person hours to complete.

[GNN.5 Inference Wrapper (6 ph) #715](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/715)

I created inference script and given the adjacency and node features and ensure output JSON matches schema and is generated.The task was estimated at 6 person hours but it took me 16 person hours to complete.

**Summary Table of Work**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| UserStory GitHub Issue ID | User Story | Story Points | Task GitHub Issue ID | Task | Task Hours | Status | Actual Hours |
| [GNN](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/595) | [DishFT-GNN: Future-Aware Distillation GNN #595](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/595) |  | [GNN.4](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/714) | [Student GNN & Distillation (7 ph) #714](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/714) | 7 | Complete | 20 |
| [GNN](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/595) | [DishFT-GNN: Future-Aware Distillation GNN #595](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/595) |  | [GNN.5](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/715) | [Inference Wrapper (6 ph) #715](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/715) | 6 | Complete | 16 |

**Summary Table of Commits**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Commit Number | Commit Description (exactly as in github) | User Story | Task |
| July 13th, 2025 | def1f51bf8b9e2b80c9aa9708867d167e7843903 | [GNN.4 and GNN.5](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/pull/774/commits/def1f51bf8b9e2b80c9aa9708867d167e7843903) | [GNN](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/595) | [GNN.4](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/714)  [GNN.5](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/715) |