**Sprint-4**

**Introduction**

In this Sprint, the purpose was to develop code for Crew AI integration, validation and testing and also backtesting and evaluation. 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.6 Crew AI Integration](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/716)

I have integrated the Crew AI agents with the exisiting code. The task was estimated at 4 person hours but it took me 12 person hours to complete.

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

I created unit and integration tests.The task was estimated at 7 person hours but it took me 9 person hours to complete.

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

I have implemented the backtesting strategy and also generated the backtesting report with the help of backtrader. The task was estimated at 11 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.6](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/716) | [Crew AI Integration](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/716) | 4 | Complete | 12 |
| [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.7](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/717) | [Validation & Testing](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/717) | 7 | Complete | 9 |
| [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.8](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/718) | [Backtesting & Evaluation](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/718) | 11 | Complete | 16 |

**Summary Table of Commits**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Commit Number | Commit Description (exactly as in github) | User Story | Task |
| August 9th, 2025 | 3471eecb218f9d415da4f731e878cf801570b210 | [Added Crew AI agents code](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/pull/783/commits/3471eecb218f9d415da4f731e878cf801570b210) | [GNN](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/595) | [GNN.6](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/716) |
| August 9th, 2025 | 2c8e83af22e097f55831fab1798315ef8b887f8e | [GNN Backtesting code](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/pull/783/commits/2c8e83af22e097f55831fab1798315ef8b887f8e) | [GNN](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/595) | [GNN.7](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/717)  [GNN.8](https://github.com/Rivier-Computer-Science/AI-Agent-Stock-Prediction/issues/718) |