

# Riley Farrell's Work Portfolio



- **Automated High School Master Schedule**
- **HR Analytics Dashboard: Employee Attrition Analysis**
- **Onboarded One of Cintas' Top 10 Local Clients**
- **Stormrider: Winning Pitch Competition Design**

# Automated High School Master Schedule Builder

## Background

Chico High School is a high school located in Chico, CA with a approximately 2,000 students and 87 teachers.

## Problem

- **Manual Scheduling Limitations:** The existing method for building the master schedule was a manual process that typically took 3 months to complete and involved numerous variables, making it challenging to manage manually.
- **Conflict Ratio:** Manual allocation achieved an 85% conflict-free rate, meaning 15% of students couldn't enroll in preferred classes.
  - **Resource Constraints:** Difficulty balancing teacher schedules and classroom utilization efficiently.

## Objective

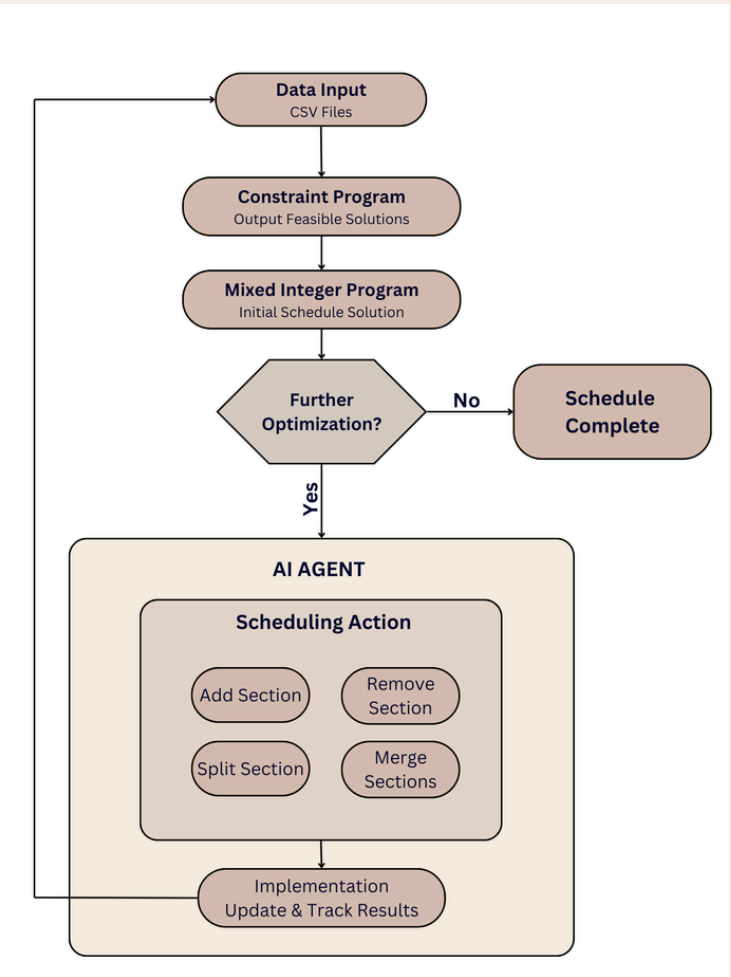
- Develop an automated scheduling solution to streamline class allocation and minimize student conflicts.

## Action

- Created a custom **Registrar LLM agent** to analyze scheduling constraints and student preferences.
- Implemented **Gurobi Optimization model** running on **AWS high-performance instances**.
- Developed an Excel output to visualize the schedule and allow for easy adjustments.
- Successfully scaled the solution to handle the full student body of 1,600 students.

## Outcome

- Improved conflict-free scheduling **~11%** while reducing process time from **3 months to hours**.
- Created a reusable, automated framework that optimizes teacher and classroom resource allocation.



▲ Program Architecture

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Legend:	AS 9											
2		AS 10											
3		AS 11											
4		AS 12											
5		Singletons											
6		Co-Teach Section											
7		Special Assign/Note											
8	Teacher	1	2	3	4	Teacher	1	2	3	4			
9	Social Sci												
10	Abelstar	2121 AG World History		Sport Cond	OFF	Abelstar	2121 World History	ADMIN MEETING	Sports Cond	OFF			
11	Bishop	8505	Student Gov	Gov/Econ	OFF	Bishop	8505 Gov/Econ	ADMIN MEETING	Student Gov	OFF			
12	Friskbe	09 US History	US History	US History	OFF	Friskbe	09 World History	AS 9	World History	OFF			
13	Hahn	2224 AP Gov/Econ	AP Gov/Econ	OFF	Hahn	2224 AP Gov/Econ	Gov/Econ	Gov/Econ	OFF				
14	Maths	8117 AP Psych	AP Psych	OFF	Maths	8117 Gov/Econ	Psychology	AP Psych	OFF				
15	Solider	2227 AS 10	AP Euro	AS 10	AP Euro	Solider	2227 OFF	OFF	OFF	OFF			
16	Schantz	2118 Econ/Gov	Econ/Gov	Econ/Gov	OFF	Schantz	2118 Econ/Gov	AP Euro	AP Euro	OFF			
17	Beehler	05 AS 10	US History	US History	OFF	Beehler	05 US History	World History	World History	OFF			
18	Webb	2119	AP Micro/Macros	AS 11	AP US Hist	Webb	2119 AP US Hist	AP US Hist	AP US Hist	OFF			
19	Towers	2225	World History	World History	OFF	Towers	2225 US History	US History	US History	OFF			
20	AG												
21	Andersen	2121 AG Biology	AG Leadership	AS 9	Andersen	2121 AG Biology	AG Biology	AG Biology	AG Biology	OFF			
22	Andersen	2121		AS 10	Andersen	2121							
23	R. Cockrell	AG2 AG Writing 1	AG Writing 1	AG Writing 2	R. Cockrell	AG2 AG Writing 1		Adv. Writing	AG Writing 1				
24	Boydston	A10 AG Parallel Adv W		AG Parallel Adv W	Boydston	A10 AG Chmn	AG Chmn		AG Writing 1				
25	Boydston	A10			Boydston	A10							
26	Arnsch	A113 AP Eng L1	HO Eng 10	OFF	Arnsch	A113 Public Speaking	EPWC	AP Eng L1	OFF				
27	Chaw	K114 New comers Eng	EPWC	AS 10	Chaw	K114 EPWC	EPWC	Film	Film	OFF			
28	Gert	K211 HO Eng 10	AP Eng Lang	OFF	Gert	K211 AP Eng Lang	AP Eng Lang	Creative Write	OFF				
29	Klein	K113 Humanities 1	Public Speaking	EPWC	Klein	K113 Humanities 2	EPWC	AP Eng Lang	OFF				
30	Mathews	04 EPWC	Film	OFF	Mathews	04 Film	EPWC	OFF	OFF				
31	Ort	C11 American Lit	Reading Lit	English 10	Ort	C11 American Lit	English 10	English 10	English 10	OFF			
32	Ort	K118 Film	English 9	English 9	Ort	K118 English 9	AS 10	English 9	English 9	OFF			
33	Ort	K212 English 9	English 9	English 9	Ort	K212 English 9	HO Eng 9	HO Eng 9	AP Eng L1	OFF			
34	Tyler	K214 English 10	Film	English 10	Tyler	K214 English 10	English 10	English 10	English 10	OFF			
35	Smith	K111 OFF	American Lit	American Lit	Smith	K111 OFF	English 9	English 9	English 9	OFF			
36	Van An	K112	English 9	English 9	Van An	K112	American Lit	American Lit	American Lit	OFF			

▲ Snapshot of Master Schedule Visualization

# HR Analytics Dashboard: Employee Attrition Analysis

## Background

Created a comprehensive analytics dashboard case study to help HR teams understand and address employee attrition factors.

## Problem

- **High Attrition Rate:** Overall attrition rate of **16.1%** across the organization with significant department variations.
- **Unknown Factors:** Limited understanding of key retention drivers and departmental differences.
- **Resource Constraints:** Need for data-driven approach to target limited HR resources effectively.

## Objective

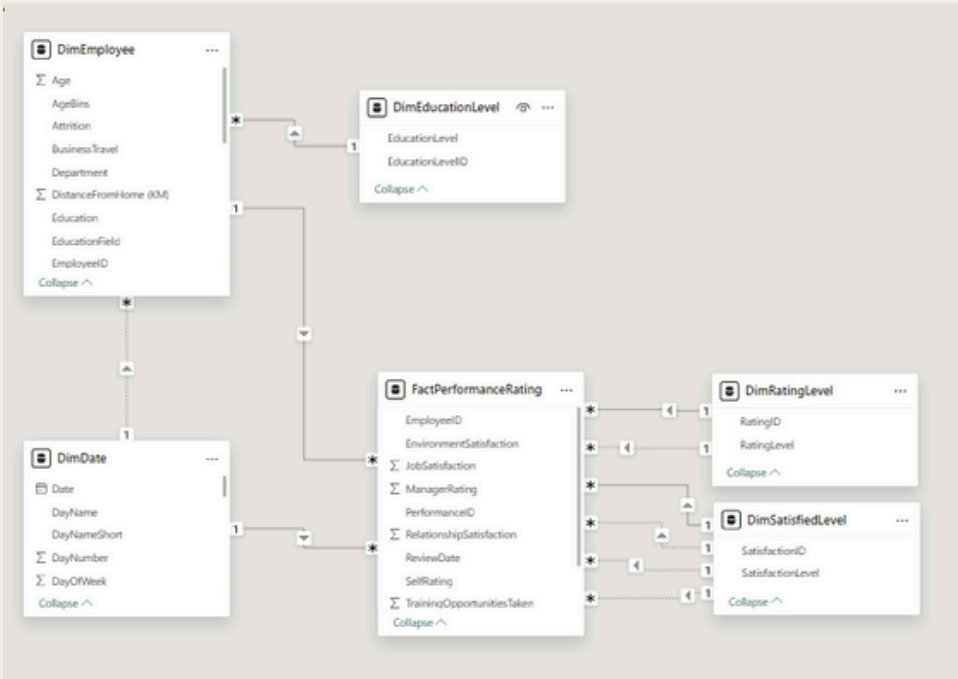
- Develop a comprehensive dashboard to identify key attrition factors and inform targeted retention strategies.

## Action

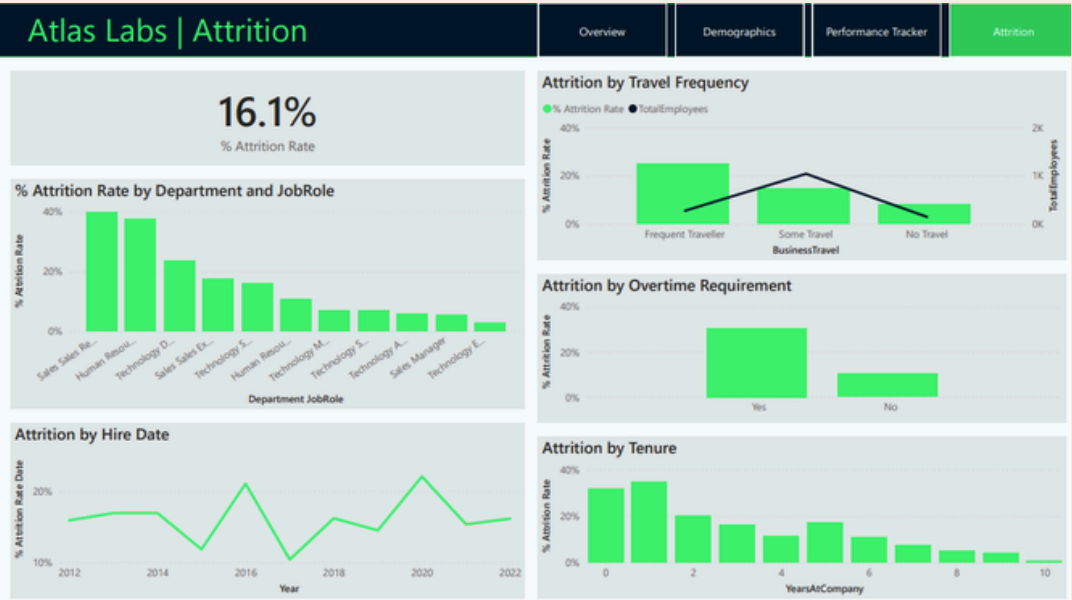
- Created a snowflake data model connecting employee, department, and satisfaction metrics.
- Developed **DAX measures** to track attrition across multiple dimensions.
- Designed **custom visualizations** for department, tenure, travel frequency, and overtime metrics.
- Built **interactive filters** for HR analysts to explore various employee segments.

## Key Insights

- Frequent travelers (24% attrition) and employees with overtime requirements (29% attrition) showed **highest turnover**.
- Recommended review of **travel policies** and targeted employee surveys based on identified risk factors.
- Created framework for ongoing **attrition monitoring** and early intervention.



▲ Data Model



▲ Attrition Visualization Page



# Onboarded One of Cintas' Top 10 Local Clients

## Background

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Cintas Fire Protection in Auburn, WA secured a new fire extinguisher servicing contract with Bellevue Collection for over **15,000 units**, covering a 6-million-square-foot portfolio and generating **top 10 revenue** for our local office.

## Problem

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- **Staff Turnover:** Recent **turnover** on extinguisher teams reduced service capacity.
- **Non-Compliance Risks:** Previous provider's non-adherence to NFPA 10 exposed client to **legal and safety risks**.
- **Large Footprint:** Managing over 15,000 extinguishers across 200 retail businesses, 2 million sq. ft. of office space, and 1,500 residential units required **5 days of monthly servicing**, challenging provider capacity.

## Objective

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- Ensure NFPA 10 compliance, stabilize operations, and streamline monthly servicing for full coverage.

## Action

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- **Direct Client Service:** Personally serviced fire extinguishers and created detailed documentation of extinguisher locations, vendor security protocols, and training materials.
- **Onboarding & Training:** **Onboarded and trained** new Cintas team member on-site, ensuring a smooth transition.
- **Stakeholder Engagement:** Coordinated with Cintas and Bellevue Collection to ensure customer satisfaction.

## Outcome

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- **Improved Compliance:** Ensured NFPA 10 adherence, **minimizing legal and safety risks** for the client.
- **Enhanced Customer Satisfaction:** Achieved **high satisfaction** through consistent and proactive communication with Bellevue Collection stakeholders.



▲ Cintas Fire Protection (Fortune 500)



▲ The Bellevue Collection  
**6 Million** Sq. Ft. Portfolio



# Stormrider: Innovative Longboard Accessory Design

## Background

Designed a functioning prototype to address challenges faced by longboarders in wet climate conditions.

## Problem

- Longboarders struggle with riding in **wet conditions**
- **High risk of accidents** due to poor visibility at night
- No effective accessories to protect riders from water and enhance **safety at night**

## Objective

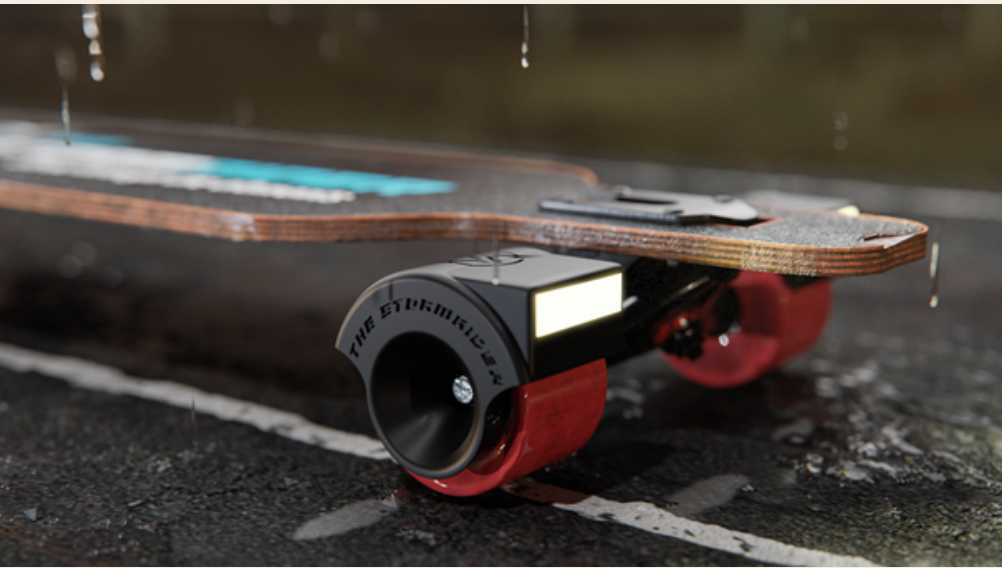
- Design an innovative longboard fender that enhances rider safety and experience in challenging weather conditions.

## Action

- Conducted comprehensive market research with over **100 longboarders**
- Developed and **A/B tested** multiple prototypes using 3D printing technology
- Participated in pitch competitions to validate product concept

## Outcome

- Secured **\$12,500** through innovation grants and pitch competitions
- Developed a unique, multi-functional longboard accessory
- Demonstrated strong product design and entrepreneurial skills



▲ Product Visual of Stormrider



▲ 2nd Place InventOR