



SOUTH TEXAS  
COLLEGE

# Advanced Manufacturing Technology

**Ms. Erika Guerra, Department Chair**  
Advanced Manufacturing Technology

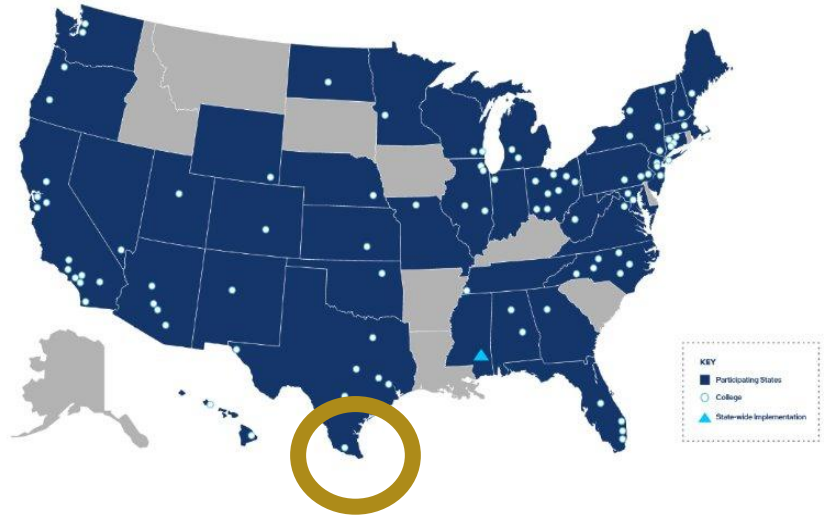
# Overview



- South Texas College
- The Case for AI in Manufacturing: Why Upskilling Matters
- Our Approach to AI Integration in the Division of Business, Public Safety & Technology
- AI in the Advanced Manufacturing Technology Program

# South Texas College

- Established 1993
- 6 Campuses
- 130+ certificates/associates (32 online)
- 5 baccalaureate degrees
- Industry Training and Continuing Education



## 47,000 STUDENTS

30,000 students (credit)  
17,000 (non-credit)



## LARGEST DUAL CREDIT PROGRAM

21 school districts/70 schools  
13,000 high school students



**96% HISPANIC**

**60% FIRST-GENERATION**

# Business, Public Safety, & Technology (BPST)

## Division

### AI Curriculum Integration Tracker

#### Purpose

- Identify
- Map
- Define
- Track

#### Key Themes Across Programs

- Industry Driven
- Enhancement
- Hands-on

| AI Tool<br>(Current AI Use) | Department(s)/ Tabs  |
|-----------------------------|--|
| Microsoft Copilot           | AEDT, BKPA, CULA, HVAC, RSTM   |
| Google Gemini               | BKPA, CULA, HVAC, RSTM   |
| ChatGPT                     | CNBT, HVAC   |
| Cam Assist                  | AMT  |
| GitHub                      | RBMT   |
| Jupyter Notebook            | RBMT   |
| Kaggle                      | RBMT   |
| None                        | ACNT, ARCH, AUTO, BMGT, CJSA, CSME, DISL, ELPT, FIRS, HRPO, SECS, LGLA, MRKG, SVGA, WELD |

# AI Integration in BPST: 3 Departments Leading the Way



## Business, Public Safety & Technology

- BPST division is adopting AI to enhance student learning and workforce readiness
- Instructional Aide as the AI Liaison



## Business Administration

- AI awareness workshops



## Culinary Arts

- Using AI-assisted design software for restaurant layout courses



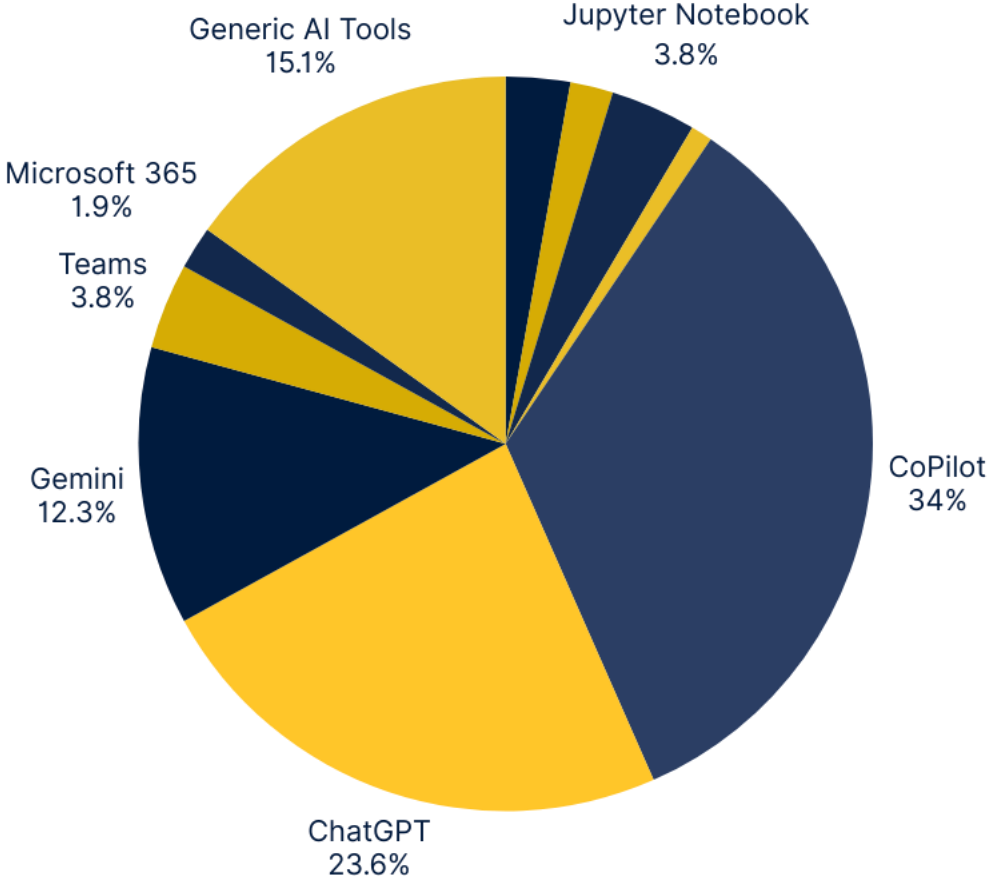
## Advanced Manufacturing Technology

- AI applications in modeling, simulation and design
- Intel's AI for Workforce

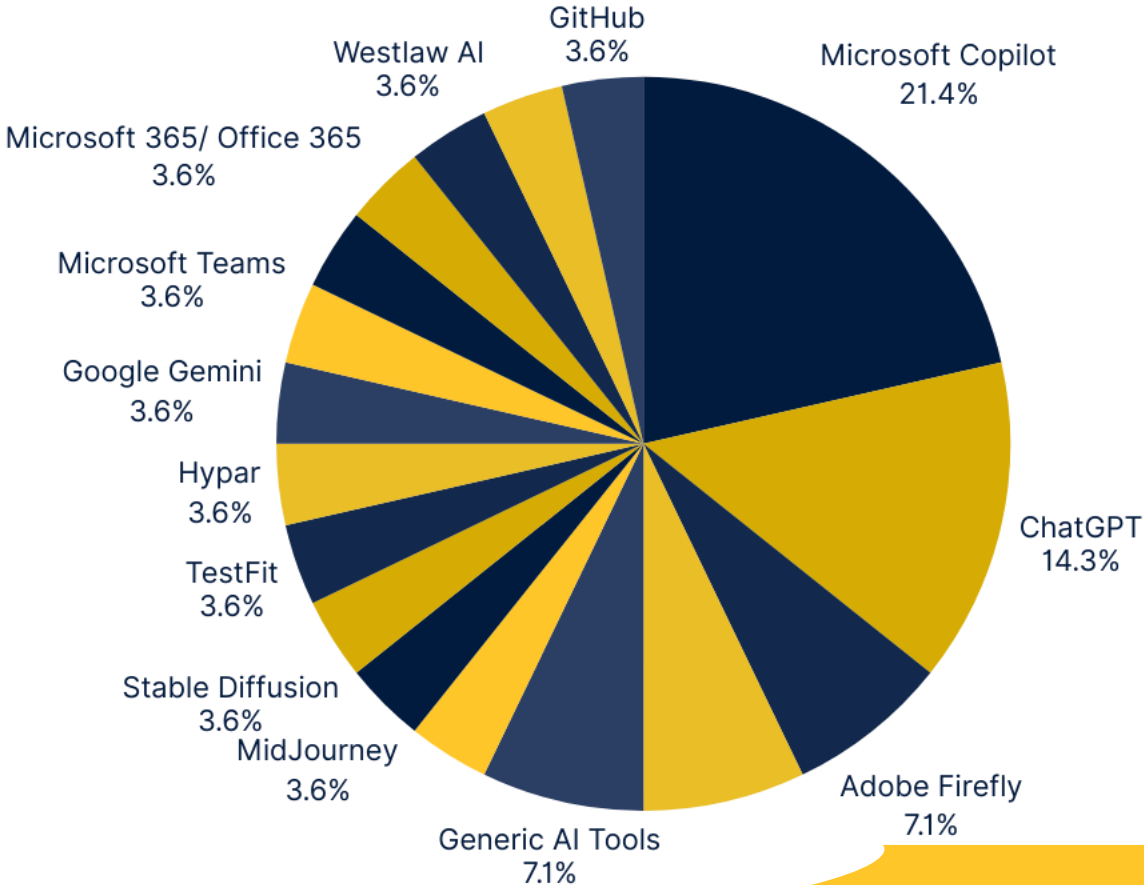


# BPST - AI Curriculum Integration Dashboard

## Current AI Implementation

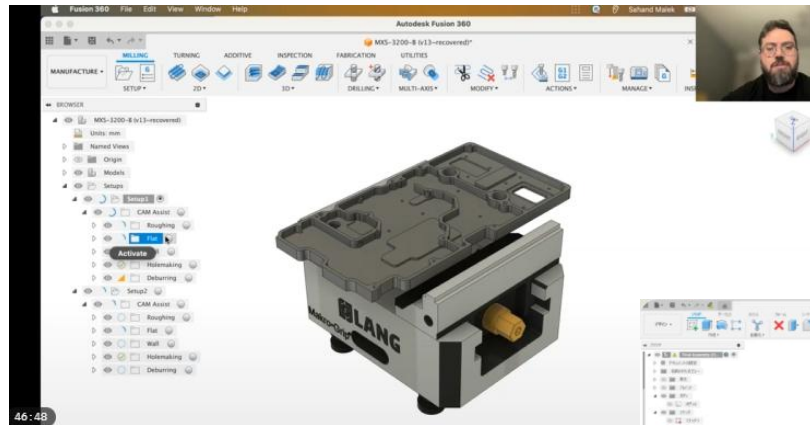


## AI Tools to Implement

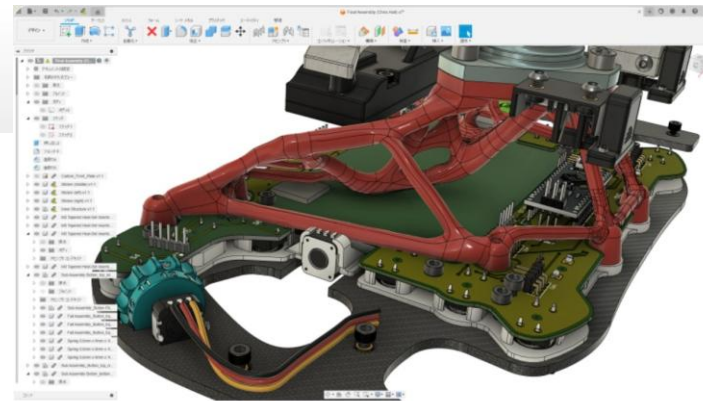


# AI Integration in Advanced Manufacturing Technology: Upskilling the Future

## Cloud NC CAM Assist, Autodesk AI



## AI Tools Embedded in Precision Manufacturing



### Generative design

Generate manufacturing-ready design alternatives with your requirements, constraints, materials, and manufacturing options using generative design.

- Intro to CAM class
- Advanced CAM
- Advanced CNC Machining
- Manufacturing, Materials and Processes

# AI Implementation in Advanced Manufacturing Technology



Robotics & Mechatronics is implementing AI for Manufacturing Course in partnership with Intel  
AI for Workforce Programs



## Predictive Maintenance

Predicting when maintenance is needed using data and sensor information



## Demand Forecasting

Estimating future demand using historical data and predictive models.

## Ongoing R&D

Real-time motor sensor data collection



## Quality Control

Using machine learning and computer vision to detect defects and ensure quality.



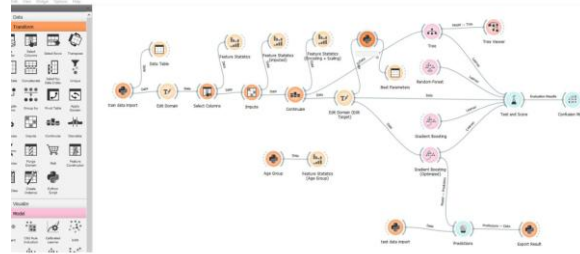
## Production Planning & Scheduling

Optimizing decisions on what to produce, when to produce it, how to allocate resources.

# AI in Manufacturing Course - Applications



Data Orange Mining



Jupyter Notebook

0.1 Order to Delivery (OTD) Time Forecasting

0.2 AI Project Cycle

0.3.1 Import the useful Packages & Libraries



Github

Dashboard

Top repositories

eleija1/Demand\_Forecasting

eleija1/Gears\_C\_B

eleija1/Jose\_and\_Carlo

Delivery Time Predictor



Streamlit



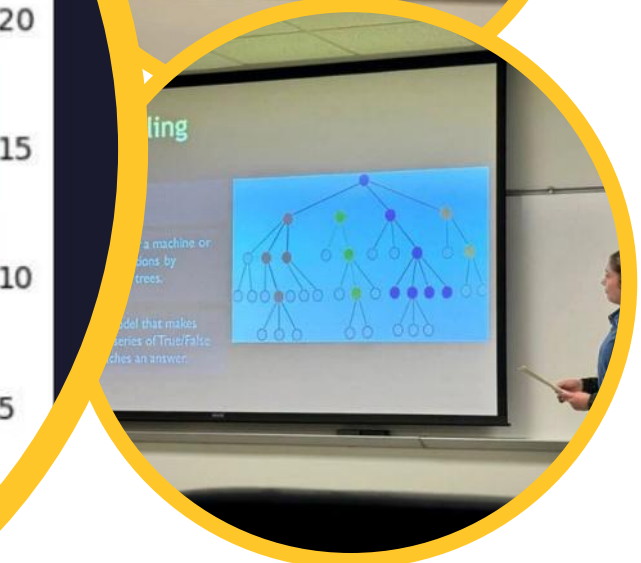
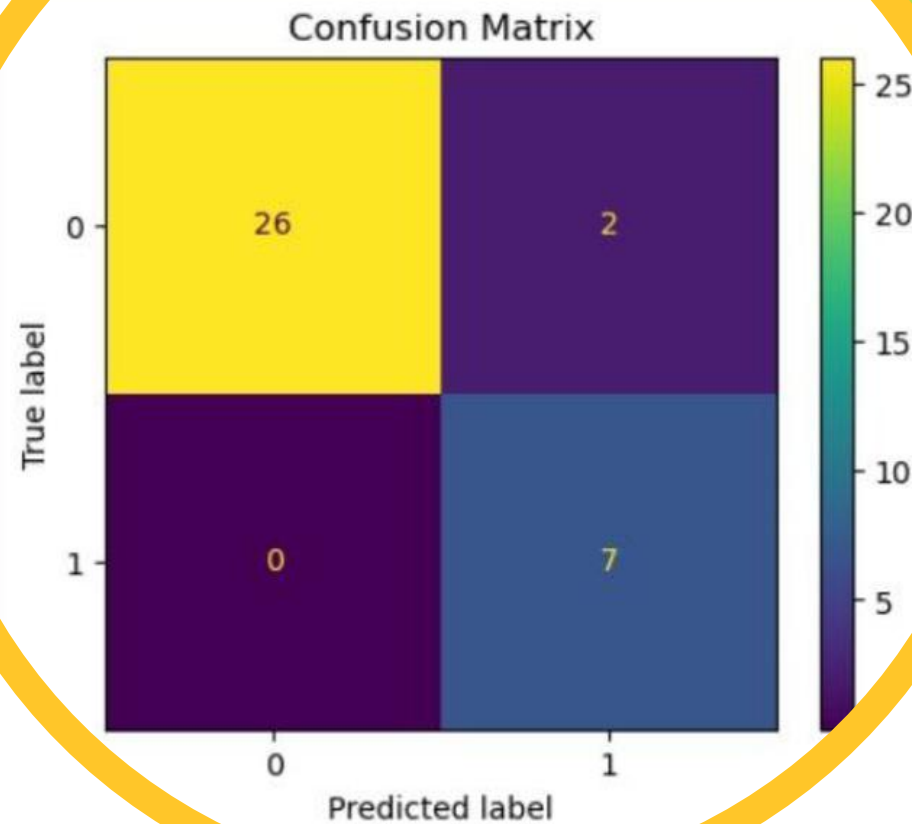
# AI for Manufacturing

## Predictive Maintenance

### Step 5 Evaluation

#### Purpose

- Data driven approach
- Reduce Downtime
- Identify Patterns & Trends
- Cost Savings



# AI for Manufacturing

## Computer Vision

### Purpose

- Monitor and analyze production processes
- Enable automated inspection, defect detection, and quality control
- Improve quality and reduce the risk of recalls

## Batch Gear Quality

Select multiple gear images to analyze a batch at once.

Choose gear images...

 Upload 200MB per file • JPG, PNG

Upload one or more gear images to begin.







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# PRECISION THAT IS

**SPOT  
ON**



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