



Knight Foundation
School of Computing
and Information Sciences

Knight Foundation School of Computing and Information Sciences

Summer 2024 Senior Design Project

Cancer Outcome and Recurrence Prediction Tool

Students: Alexis Diaz, Joshua Andres Fernandez, Sebastian Galloway, Michelle Pacheco, Raul Pena

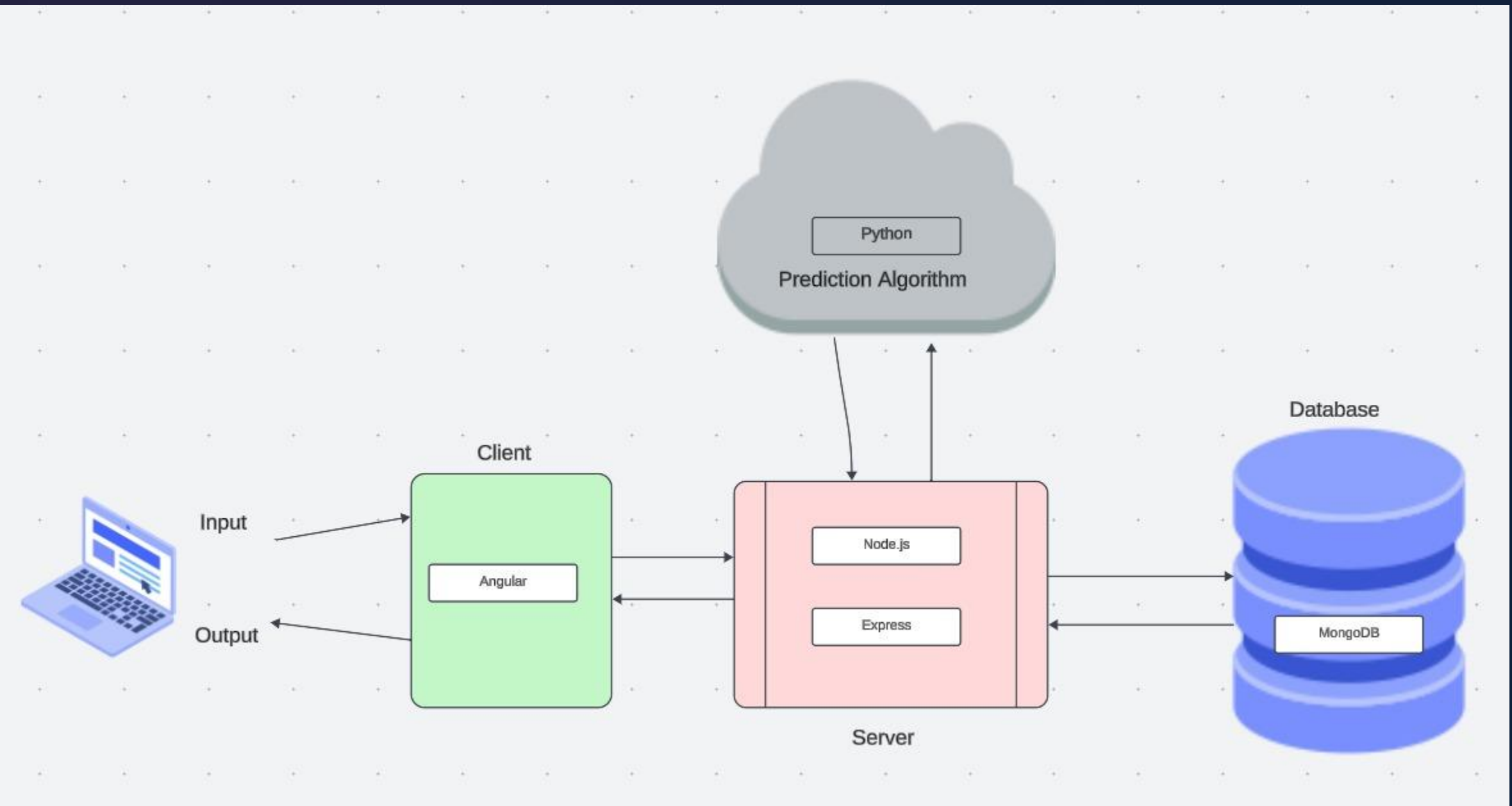
Mentor: Chris Poellabauer, Ph.D.

Instructor/Faculty: Dr. Masoud Sadjadi, Florida International University

PROBLEM

Cancer treatment is complex and requires personalized decisions. Our task is to create a web-based tool for inputting patient data and accessing machine learning predictions for cancer outcomes, providing real-time, personalized treatment recommendations.

SYSTEM DESIGN



OBJECT DESIGN

Components:

- Patient Interface: Includes all Patient fields
- Patients-List Component: Displays list of patients fetched from Mongodb database
- Add-Patient Component: Provides a form for entering patient details.

IMPLEMENTATION

Patient Entry

Patient ID:

Diagnosis Age:

Sex: ☐ Male ☐ Female

Race: ☐ American Indian or Alaska Native ☐ Asian ☐ Black/African American ☐ Native Hawaiian/Other Pacific Islander ☐ White ☐ None

Patient Weight:

Cancer Entry

Oncotree Code: ☐ USC ☐ USC ☐ WMEC ☐ None

Cancer Type Detail: ☐ Uterine Endometrial Carcinoma ☐ Uterine Mixed Endometrial Carcinoma ☐ Uterine Serous Carcinoma/Uterine Papillary Serous Carcinoma ☐ None

Tumor Type: ☐ Endometrioid Endometrial Adenocarcinoma ☐ Mixed Serous and Endometrioid Carcinoma ☐ Serous Endometrial Adenocarcinoma ☐ None

Grade: ☐ 01 ☐ 02 ☐ 03 ☐ HIGH GRADE ☐ None

Tissue Source Site Code:

Aneuploidy Score:

Patient ID	Action
TCGA-A5-A0G2	<button>View Patient Information</button>
TCGA-A5-A0G9	<button>View Patient Information</button>
TCGA-A5-A0GE	<button>View Patient Information</button>
TCGA-A5-A0GB	<button>View Patient Information</button>
TCGA-AJ-A23N	<button>View Patient Information</button>
TCGA-A5-A0GG	<button>View Patient Information</button>
TCGA-SB-A90C	<button>View Patient Information</button>
TCGA-A5-A0QP	<button>View Patient Information</button>
TCGA-A5-A0GA	<button>View Patient Information</button>
TCGA-A5-A0GI	<button>View Patient Information</button>

Patient Details	
Patient ID:	TCGA-A5-A0G2
Diagnosis Age:	57
Sex:	Female
Last Communication Contact from Initial Pathologic Diagnosis Date:	4549
New Neoplasm Event Post Initial Therapy Indicator:	No
Person Neoplasm Cancer Status:	With Tumor
Race:	Asian
Radiation Therapy:	Yes
Patient Weight:	60
Overall Survival Status:	0:LIVING
Overall Survival Months:	149.5545254
Disease Specific Survival Status:	0:ALIVE OR DEAD TUMOR FREE
Months of Disease Specific Survival:	149.5545254

VERIFICATION

Integration Testing: Tested the integration to ensure smooth flow between frontend, backend, and database.

REQUIREMENTS



SUMMARY

This project aims to improve cancer treatment by providing clinicians with a web-based tool that uses machine learning to predict cancer outcomes and recurrence, offering real-time, personalized recommendations.

REFERENCES

<https://www.mongodb.com/resource-s/languages/mean-stack-tutorial>
<https://expressjs.com/>
<https://v17.angular.io/docs>
<https://nodejs.org/docs/latest/api/>



Engineering
& Computing

ACKNOWLEDGEMENT

The material presented in this poster is based upon the work supported by Dr. Chris Poellabauer. We/I thank Dr. Poellabauer for his/her/their assistance and mentorship that I/we received throughout the senior design project.

FLORIDA INTERNATIONAL UNIVERSITY