

# NATARAJAN PILLAI

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## EDUCATION

**Northeastern University** Boston, USA  
Master of Science in Software Engineering Systems (**GPA: 3.63**) May 2024

**Vellore Institute of Technology** Vellore, India  
Bachelor of Technology in Electronics & Comm. Engineering May 2019

## EXPERIENCE

**Software Engineer** Aug 2024 - Present  
Bear Brown & Company *Boston, USA*

- Led the backend development of a **Kanban** dashboard, building a **modular** system with **Express.js**, JWT authentication, and **role-based access control (RBAC)**, while guiding the team through code reviews and **CI/CD** deployment
- Designed a scalable MongoDB schema, optimizing data models like Users, Projects, and Tasks, ensuring **data normalization** and high performance for complex queries, while securing access to data through authentication layers
- Developed and deployed **secured RESTful APIs** for project management with **CRUD** operations, integrating business logic for task assignments, status updates and permissions. Enhanced error handling, reducing bugs by **35%**
- Deployed backend services on **Amazon Web Services (AWS)**, configuring **EC2** instances and MongoDB for high availability, implementing **SSL** certification, and conducting load testing to ensure scalability under high traffic

**Software Developer** Aug 2020 - Feb 2021  
Pannini - Digital Solutions Provider *Bangalore, India*

- Developed a **Python**-based **OCR** tool utilizing Tesseract, improving applicant processing efficiency by **80%** to **2 minutes**, streamlining data management for legal departments
- Created an algorithm for **image compression** in **C** using lossless techniques, cutting image sizes by **25%** and bandwidth costs by **35%**, accelerating webpage loading times
- Directed the cloud migration of legacy systems to **AWS**, utilizing **EC2**, **RDS**, and **S3** to enhance system scalability and reliability while maintaining real-time analytics capabilities
- Engaged in **Agile development cycles**, coordinating with product managers and utilizing **Jira** for project management

**Mobile Application Developer** Jun 2019 - Dec 2019  
Exarcplus - Web & Mobile App Development Specialists *Bangalore, India*

- Spearheaded the creation of a **Java**-based event management platform, integrating **Firebase Cloud Messaging** for real-time notifications, boosting engagement by **25%** and improving event update efficiency, reaching **10,000+** users
- Collaborated with cross-functional teams to implement and deploy **modular** Android shopping and food delivery apps with customizable and efficient API integration for product listings, increasing client retention by **20%**
- Guided team trainings on best coding standards and **Agile methodologies**, focusing on unit testing with **JUnit**, achieving a **30% decrease** in post-deployment bugs and improving overall code quality and project delivery

## PROJECTS

**Infinotes** [[Github](#)] [[Live Demo](#)]

- Engineered a scalable note-taking platform using **Java Spring Boot** with **MVC** architecture, integrated **Spring Security** for robust authentication and role-based access control
- Implemented **DAO patterns** with Hibernate ORM, leveraging **AWS** for deployment, storage and **CI/CD** capabilities.

**Peticure** [[Github](#)] [[Live Demo](#)]

- Developed a full-stack pet adoption platform using the **MERN** stack, **Next.js**, and **REST** architecture, implementing email verification, profile personalization, and secure JWT-based authentication
- Enhanced state management with Redux Toolkit, deploying PWA features and integrated Stripe API for payments for improved user functionality.

**America's Roadmap** [[Github](#)]

- Tackled the NP-hard **Travelling Salesman Problem** for a network of **530** U.S. cities, implementing the **Christofides algorithm** and leveraging advanced data structure
- Executed a suite of optimization techniques, including **random swapping** for initial solution improvement, **2-opt** for local search optimization, **simulated annealing** for probabilistic improvement, and **ant colony** for iterative refinement, achieving a **35% improvement** over the initial tour value

## SKILLS

<b>Progammng</b>	Java, SQL, Python, JavaScript, TypeScript, C
<b>Back-End</b>	Express.js, Java Spring & Spring Boot, JUnit
<b>Front-End</b>	Next.js, React.js, Thymeleaf, HTML, SASS, Material UI, Bootstrap, Figma, Axure RP
<b>Database &amp; ORM</b>	MySQL, AWS S3, AWS RDS, Oracle SQL, Elasticsearch, MongoDB, Redis, Hibernate
<b>Tools</b>	Node.js, JWT, AWS EC2, OAuth 2.0, RabbitMQ, Kibana, Jupyter, Android Studio, Git, Postman