

An End-to-End framework for AI workflow automation

➔ <https://leetbeed.tk>

EVA4P2 Capstone Project

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► Vision Framework

- ▶ Supports multiclass classification of up to 10 classes for vision models.
- ▶ You can upload up to 1000 images with 100 images per class
- ▶ Uses ResNet-50 and transfer learning on AWS EC2 instances
- ▶ Single-click deployment of trained models on AWS LAMBDA

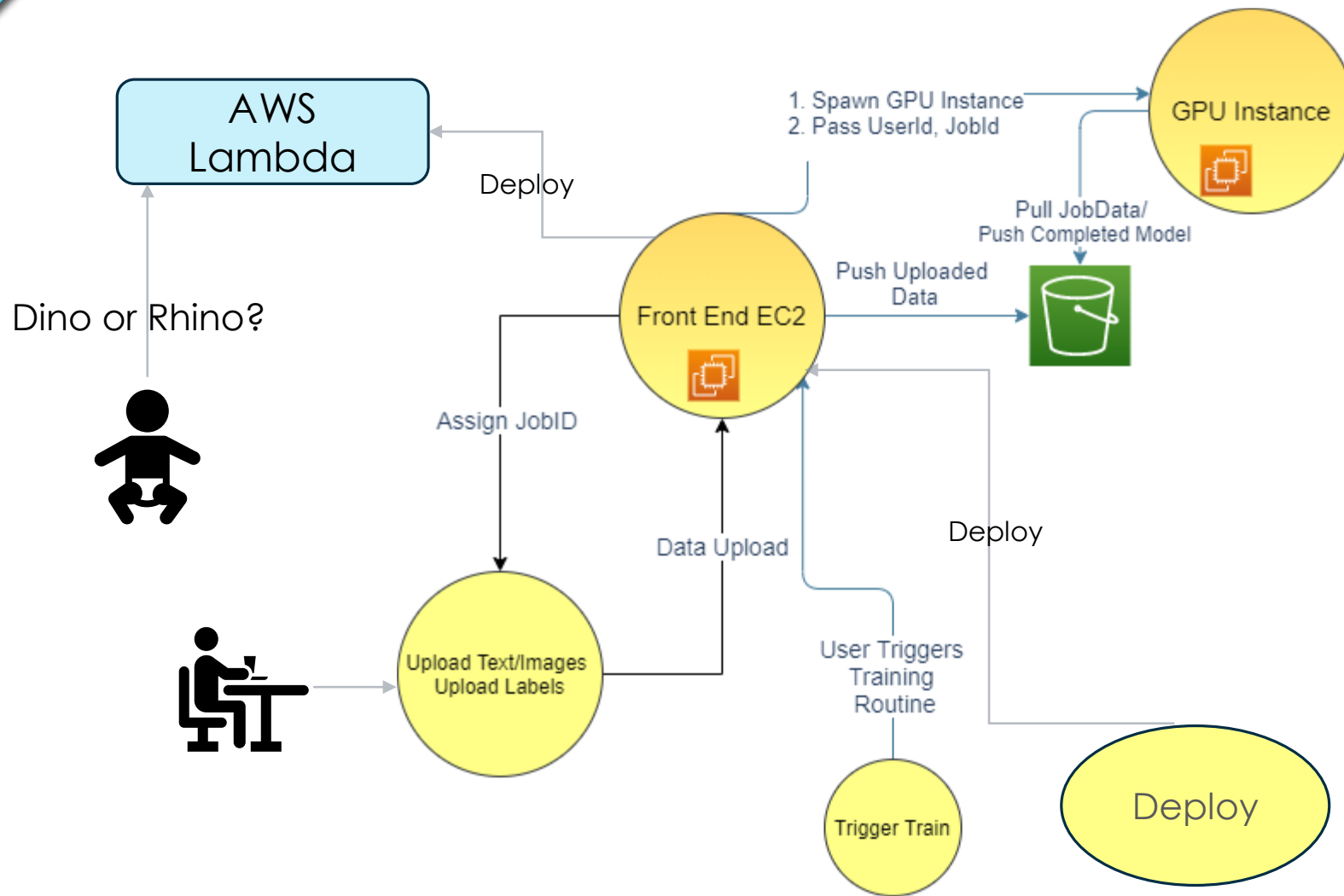
► Text/NLP Framework

- ▶ Upload a .csv file containing text vs Labels
- ▶ Supports multi-class labels
- ▶ You can upload up to 1000 images with 100 images per class
- ▶ Uses 2-layer LSTM on AWS EC2 instances
- ▶ Single-click deployment of trained models on AWS LAMBDA

WHAT IS LEETBEED?

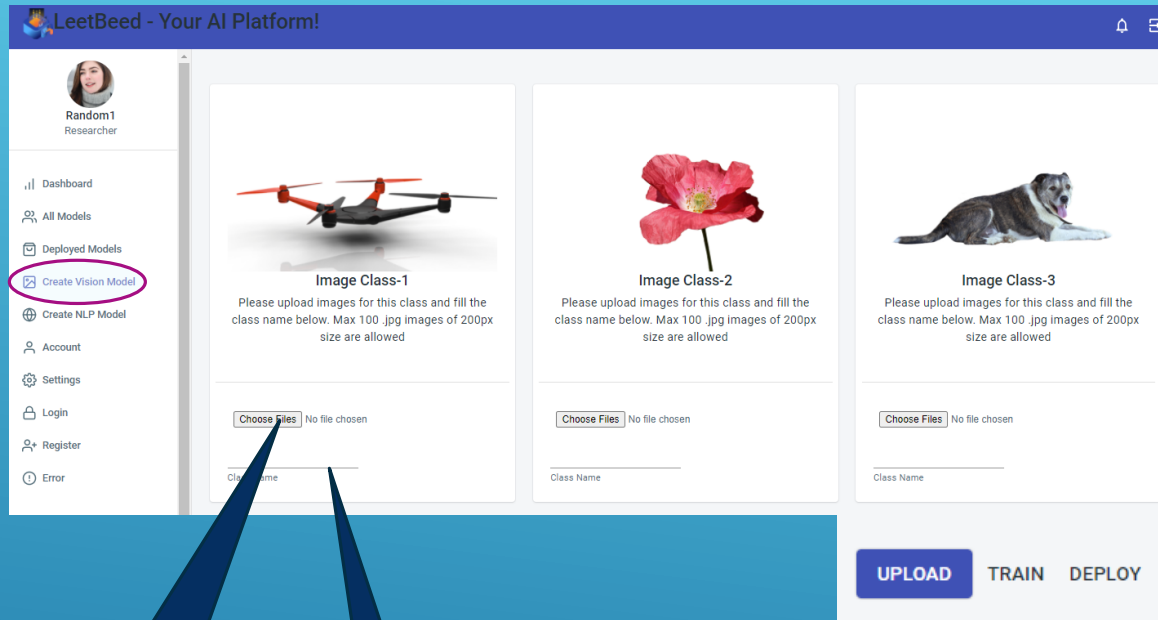
Build and deploy Vision/Text
Model in less than 10mins!





LeetBeed Platform Architecture

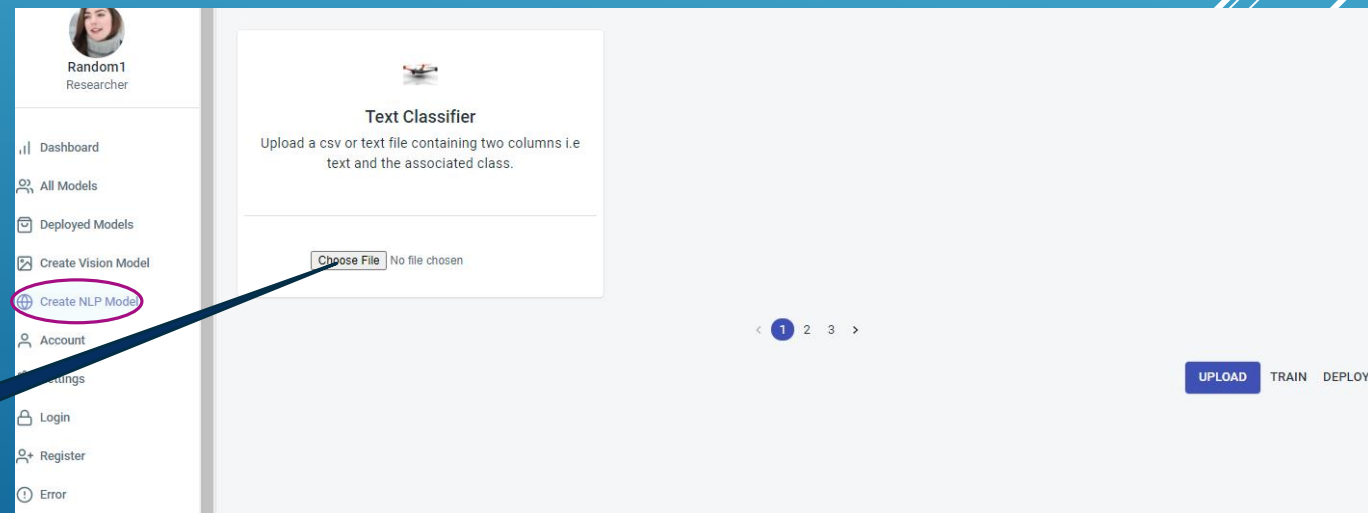
LeetBeed New Model Creation Pages



Select your image files

Enter corresponding class name

- A new “job” is created once you select your files and click on “Upload”
- The selected files are pushed to AWS S3 bucket by the backend.
- Once data is uploaded → Train → Deploy



Upload a csv file


LeetBeed Deployed Model – Test and Verify your Deployed Models


The screenshot displays the LeetBeed AI Platform interface. At the top, a dark blue header contains the LeetBeed logo and the text "LeetBeed - Your AI Platform!". Below the header, a sidebar on the left lists navigation options: Dashboard, All Models, Deployed Models (highlighted with a red circle), Create Vision Model, Create NLP Model, Account, Settings, Login, Register, and Error. The main content area shows a grid of six deployed models, each with a unique icon and ID. The models are arranged in two rows of three. Each model card includes a "Class Names" input field, a "Text Data" input field, and a "TEST" button. The "Deployed Models" tab in the sidebar is highlighted with a red circle. At the bottom right of the main content area, there is a "REFRESH" button.

Model ID	Type	Class Names	Text Data	Action
NLP Model 1e56004031	NLP			TEST
NLP Model 143f20230d	NLP			TEST
Vision Model 24c9720550	Vision	xuv500,harrier		TEST
Vision Model 1402de0bf3	Vision			TEST
NLP Model a1570703ca	NLP	3,4,2,1		TEST
Vision Model 2c662c3985	Vision			TEST

- All the deployed models appear on this page.
- For vision models, select an image and click on Test.
- For NLP models, a direct text input can be provided.
- First attempt is delayed because of AWS Lambda cold start problems

LeetBeed Model Status – Summary view of Model Progress

 **LeetBeed - Your AI Platform!**



Random1
Researcher

Dashboard

All Models

Deployed Models

Create Vision Model

Create NLP Model

Account

Settings

Login

Register

Error

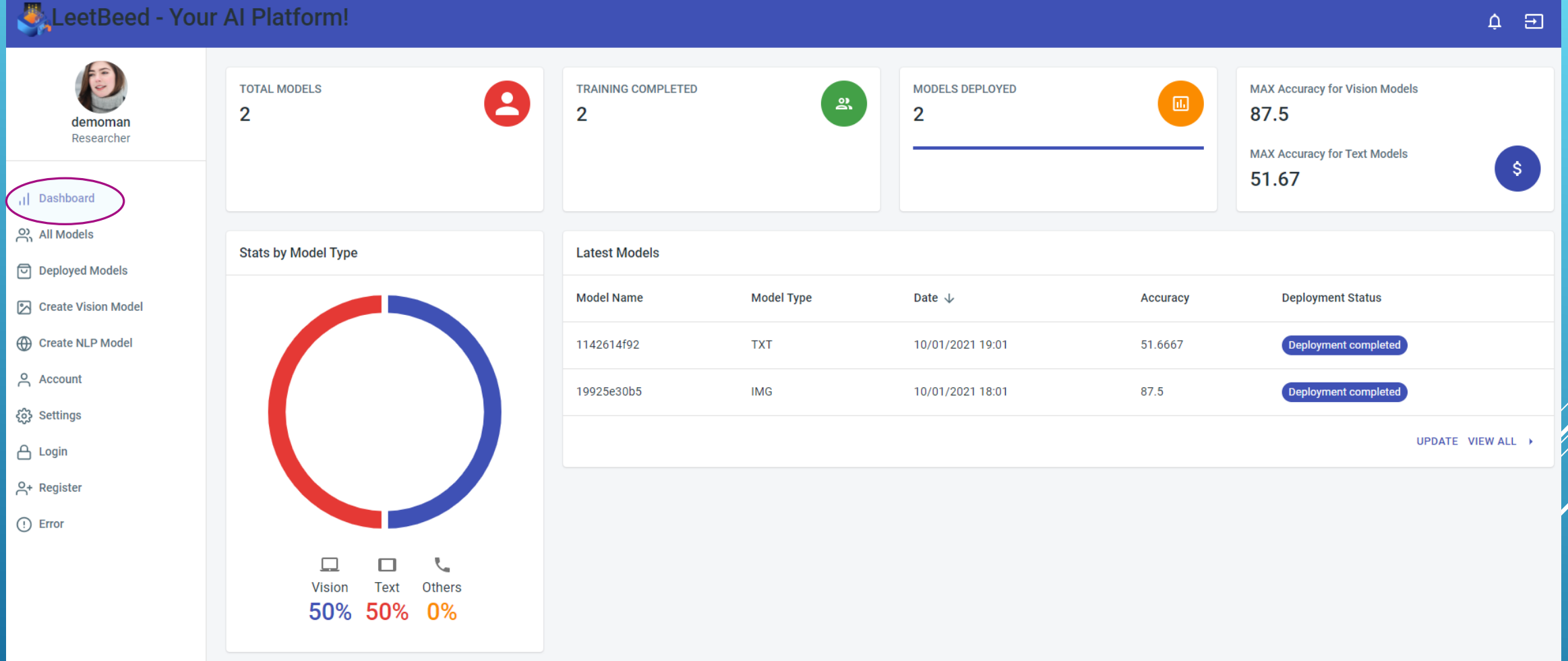
REFRESH TRAIN DEPLOY DELETE

	Model Name	Model Type	Creation Date	Accuracy	Upload Status	Training Status	Deployment Status
<input checked="" type="checkbox"/>	1e56004031	TXT	10/01/2021	51.1458	Upload Completed	Training completed	Deployment completed
<input checked="" type="checkbox"/>	143f20230d	TXT	10/01/2021	50.2083	Upload Completed	Training completed	Deployment completed
<input checked="" type="checkbox"/>	24c9720550	IMG	10/01/2021	50	Upload Completed	Training completed	Deployment completed
<input type="checkbox"/>	1402de0bf3	IMG	10/01/2021	11.5108	Upload Completed	Training completed	Deployment completed
<input type="checkbox"/>	a1570703ca	TXT	10/01/2021	50.5208	Upload Completed	Training completed	Deployment completed
<input type="checkbox"/>	2c662c3985	IMG	06/01/2021	73.3333	Upload Completed	Training completed	Deployment completed

Rows per page: 10 1-6 of 6

- Check your model's current status i.e. Training Status, deployment status
- This screen also allows to Bulk Train/Deploy your models by selecting the respective checkboxes and clicking on Train/Deploy respectively

LeetBeed Dashboard – Bird's Eye View of your Models



- Simple and easy-to-use Dashboard.

Tools and Framework Details

- ReactJS based front-end served from AWS CloudFront to support HTTPS.
- Django/NGINX for backend servers to manage user requests
- Django-Q to manage multiple long running jobs such as:
 - Interaction with S3
 - Booting and triggering training on GPU instances
 - LAMBDA deployments via Serverless
- Pretrained ResNet-50 was used as the base model with head modified based on the input classes. Transfer learning with fine-tuning of last 2 layers for 5 epochs is used.
- For language models, 2 layer LSTM was used.
- All the models are trained on EC2 instances of G4dn.xlarge family.

Challenges and Further Scope

- Barebones LSTM model to be replaced by “Simple Transformers” model
- Faster data sharing mechanism using AWS EFS volume for sharing training data
- OpenAPI support with HTTPS to facilitate ease-of-integration
- RBAC, enhanced security and log management.

Thank You TSAI

- **Rohan Shravan** for his patience and guidance throughout EVA4 P1 and P2....and beyond
EVA4 journey has been the best learning experience!
- **Zoheb A** for his timely support and handholding!
- Awesome EVA4 P2 batchmates!!