

# Optimizing the Runtime of Machine Learning Web Application Utilizing Azure Web Application Services.

JOHN SALAKO

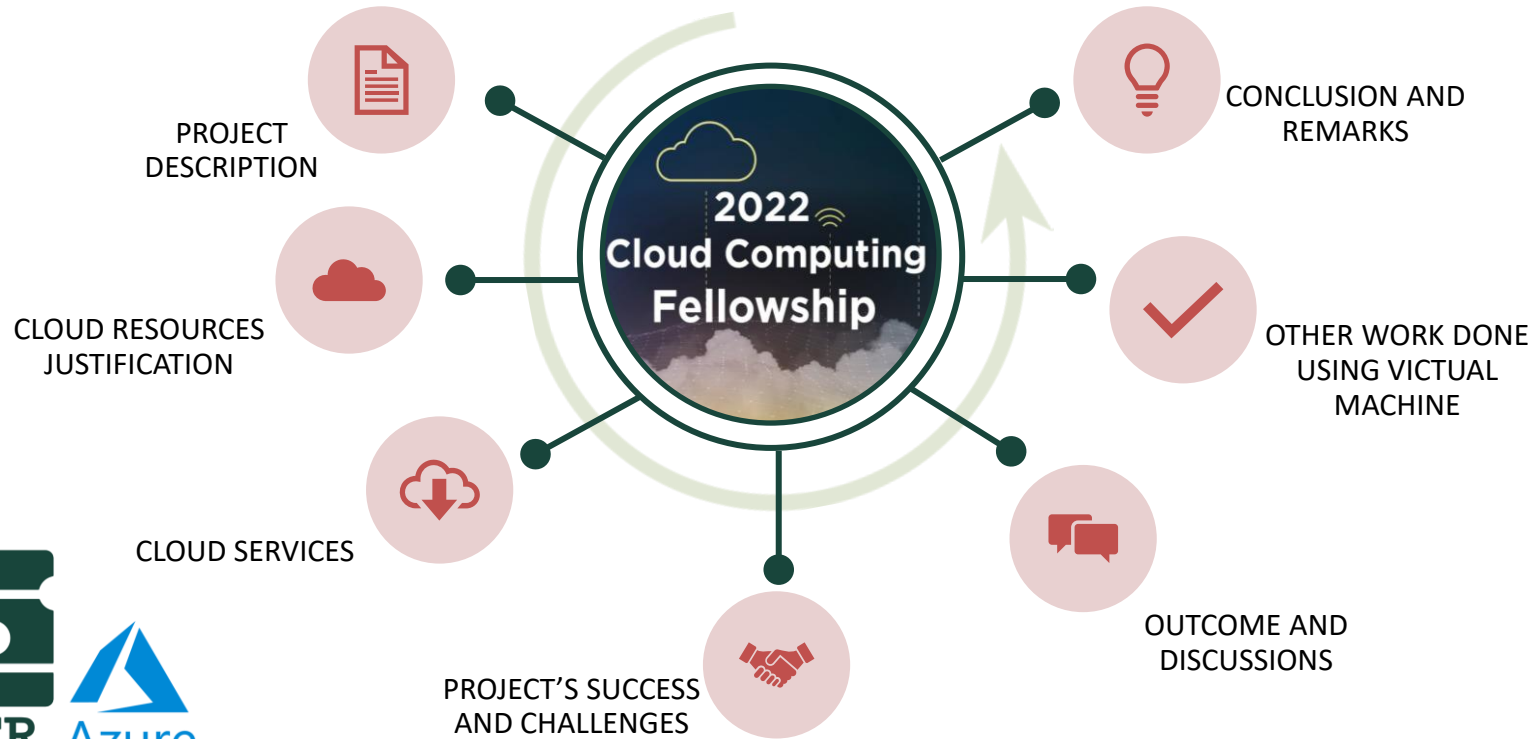
[salakojo@msu.edu](mailto:salakojo@msu.edu)

[https://github.com/TheGospeler/Azure\\_Web](https://github.com/TheGospeler/Azure_Web)

Department of Earth and Environmental Sciences

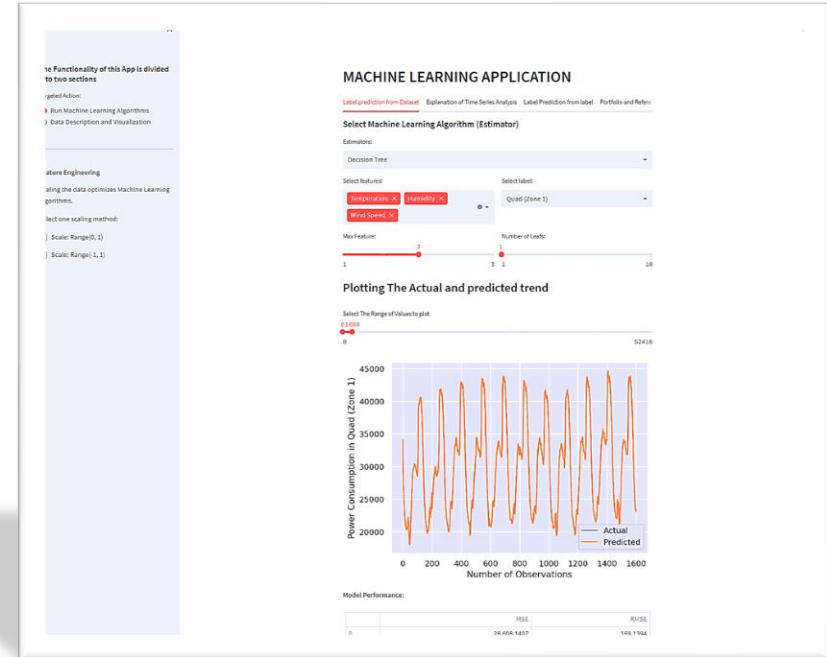
Michigan State University

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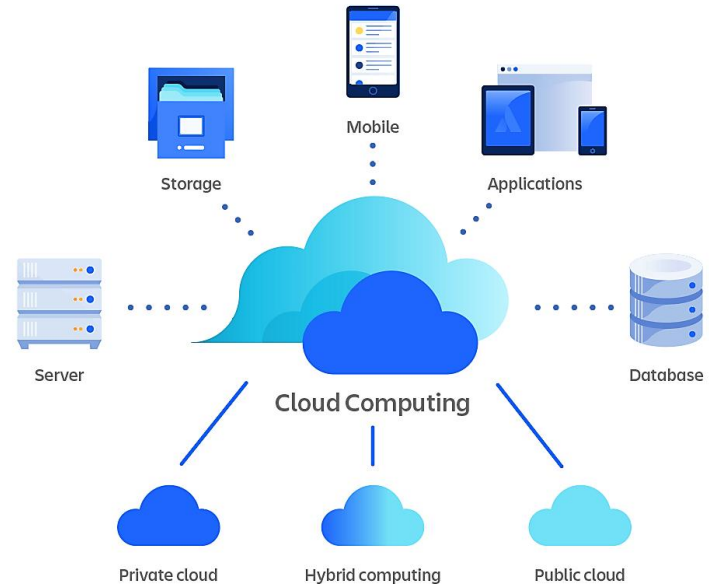
# Project Description

- Compare the Streamlit cloud services to Azure Web services.
- Potential of running large-scale ML projects using Azure.
- Compare the runtime of the app using the different web services

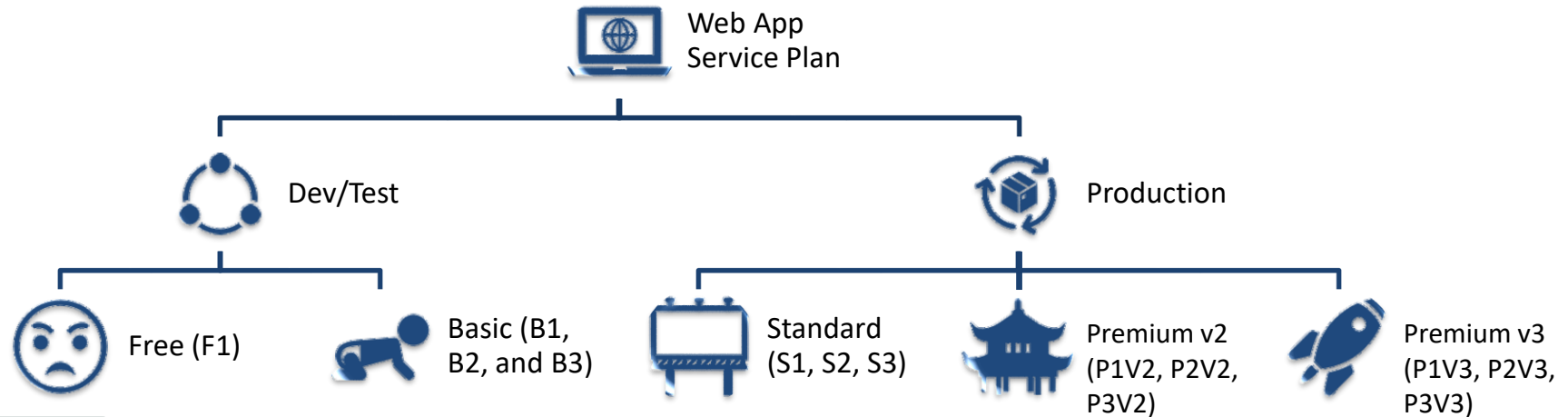


# Cloud Resources Justification

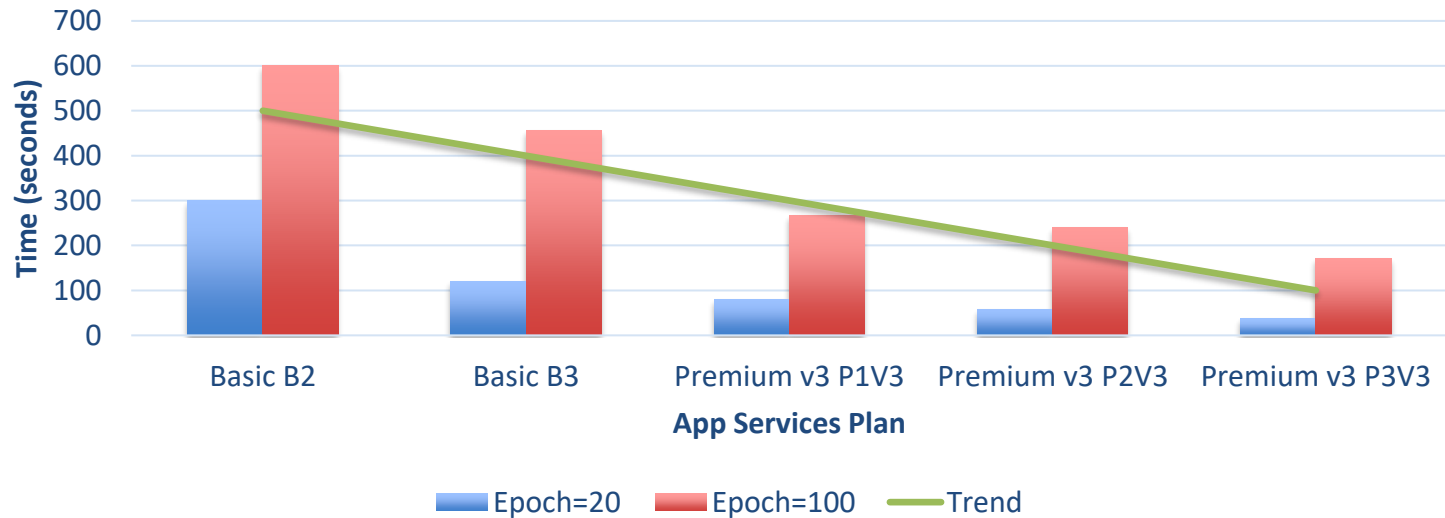
- Flexibility of scaling (downscaling and upscaling)
- Plethora of options
- Big data computing against traditional PC.



# Cloud Services- App Service (Web App)



# Project Success – Neural Net. Runtime Reduction



# Outcome and Discussions

- Scaling the web service plan from Dev/Test to the Production framework reduced the runtime for the neural network.
- Trade-off between optimization and cost factor.

	Name	ACU/vCPU	vCPU	Memory (GB)	Remote Storage (GB)	Scale (instance)	SLA	Cost per hour	Cost per month <sup>1</sup>
▼	Dev/Test (For less demanding workloads)								
<input type="checkbox"/>	Free F1	60 minutes/day...	N/A	1	1	N/A	N/A	<b>Free</b>	<b>Free</b>
<input type="checkbox"/>	Basic B1	100	1	1.75	10	3	99.95%	<b>0.018 USD</b>	<b>13.14 USD</b>
<input type="checkbox"/>	Basic B2	100	2	3.5	10	3	99.95%	<b>0.035 USD</b>	<b>25.55 USD</b>
<input type="checkbox"/>	Basic B3	100	4	7	10	3	99.95%	<b>0.07 USD</b>	<b>51.10 USD</b>

# Outcome and Discussions

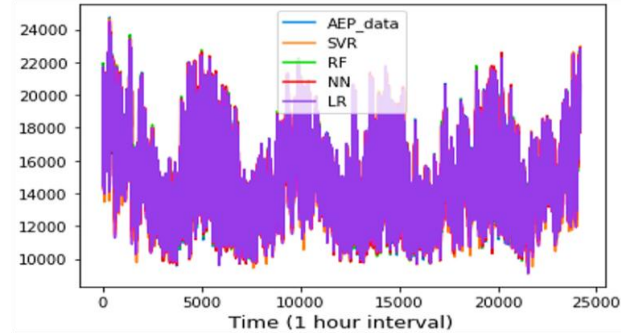
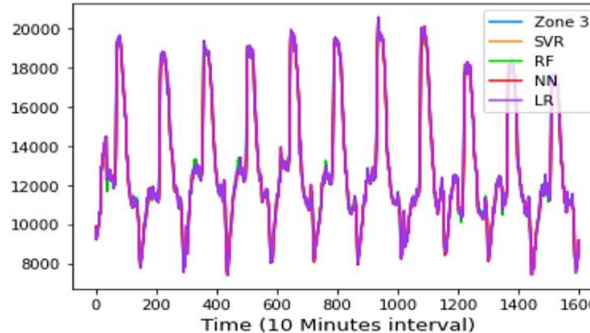
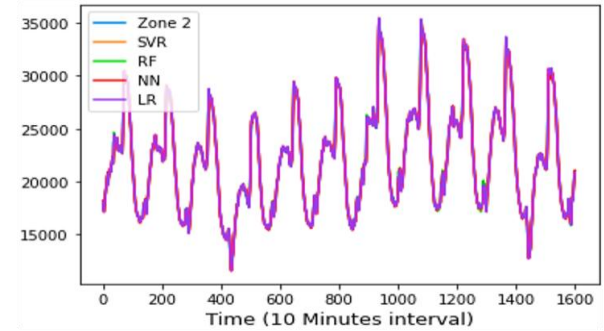
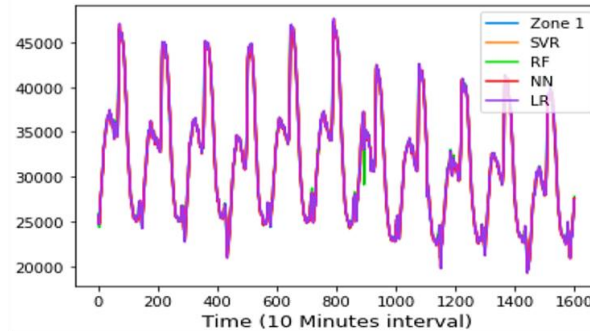
- Scaling the web service plan from Dev/Test to the Production framework reduced the runtime for the neural network.
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	Name	ACU/vCPU	vCPU	Memory (GB)	Remote Storage (GB)	Scale (instance)	SLA	Cost per hour	Cost per month <sup>†</sup>
>	Dev/Test (For less demanding workloads)								
✓	Production (For most production workloads)								
<input type="checkbox"/>	Standard S1	100	1	1.75	50	10	99.95%	0.095 USD	69.35 USD
<input type="checkbox"/>	Premium v2 P1V2	210	1	3.5	250	30	99.95%	0.111 USD	81.03 USD
<input type="checkbox"/>	Premium v3 P1V3	195	2	8	250	30	99.95%	0.17 USD	124.10 USD
<input type="checkbox"/>	Standard S2	100	2	3.5	50	10	99.95%	0.19 USD	138.70 USD
<input type="checkbox"/>	Premium v2 P2V2	210	2	7	250	30	99.95%	0.221 USD	161.33 USD
<input type="checkbox"/>	Premium v3 P2V3	195	4	16	250	30	99.95%	0.34 USD	248.20 USD
<input type="checkbox"/>	Standard S3	100	4	7	50	10	99.95%	0.38 USD	277.40 USD
<input type="checkbox"/>	Premium v2 P3V2	210	4	14	250	30	99.95%	0.442 USD	322.66 USD
<input checked="" type="checkbox"/>	Premium v3 P3V3	195	8	32	250	30	99.95%	0.68 USD	496.40 USD



# Other Project: Time Series Forecasting Using VM

The OSA approach effortlessly predicts the Time series data accurately.



Thank you!