

# R in Power BI for Absolute Beginners



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# Jen Stirrup

- Boutique Consultancy Owner of Data Relish
- Postgraduate degrees in Artificial Intelligence and Cognitive Science
- Twenty year career in industry
- Author

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What is R?

## Why R?

- Open Source
- 12K packages on CRAN
- Rstudio / Visual Studio and R
- Statistics, Machine Learning, AI all in one place
- Great integration with Azure and other cloud frameworks



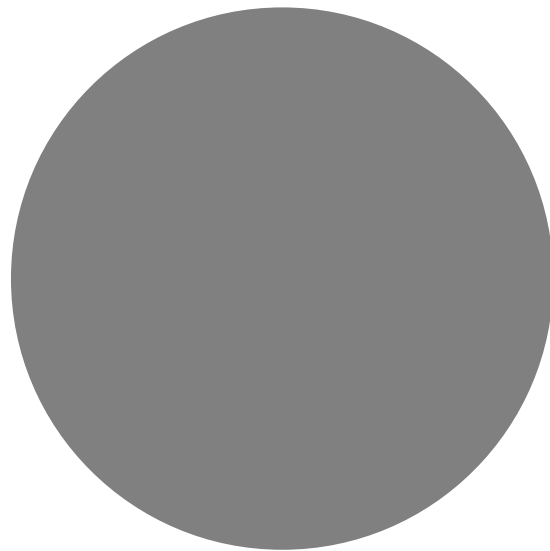
# Why R in Artificial Intelligence?

# Why R in Artificial Intelligence?

- Model result aggregation via broom
- Cross-validation with caret
- Reproducible Results with Rmarkdown and knitr

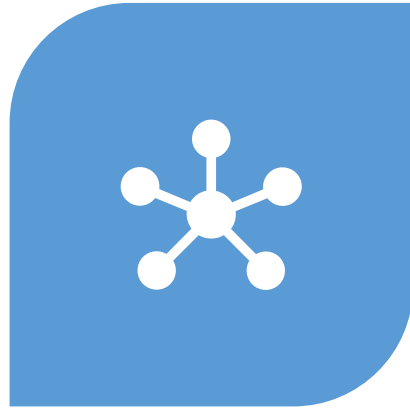
# Why R in Deep Learning?

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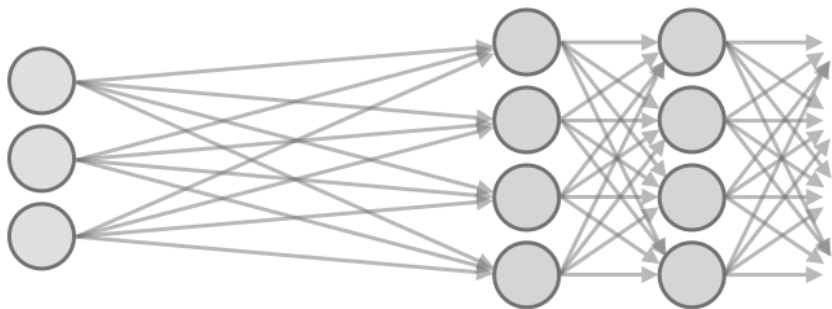
# What is a Neural Network?



NEURAL NETWORKS ARE A CLASS OF MODELS THAT ARE BUILT WITH LAYERS.



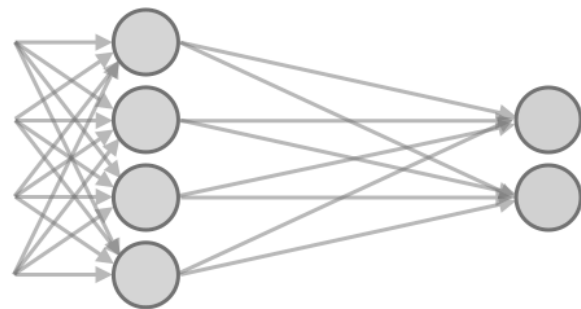
COMMONLY USED TYPES OF NEURAL NETWORKS INCLUDE CONVOLUTIONAL AND RECURRENT NEURAL NETWORKS.



Input layer

Hidden layer 1

...



...

Hidden layer  $k$

Output layer

## Deep Communicating Agents for Natural Language Generation

Established: October 1, 2017

Sequence generation is important because we need it to solve real life problems such as machine translation, document summarization, question generation, sentence generation, as well as many image and video captioning tasks that are developed at MSR in the last years. Deep neural network based MSR image captioning system, has won the first prize (tied with Google) at the COCO Captioning Challenge 2015. More recently, the advancement of two novel training paradigms including...

## Model-based Deep Reinforcement Learning for Control Problems

Established: August 1, 2017

This research project aims at developing a new class of Reinforcement Learning (RL) algorithms that are sample efficient, off policy, and transferable. We seek to demonstrate these new algorithms in real-world operational optimal control applications such as Indoor Vertical Farm Optimization Data Center Energy Consumption Optimization News Microsoft Asia News Center covers our research in indoor vertical farming

## Vision and Language Intelligence

Established: June 28, 2017

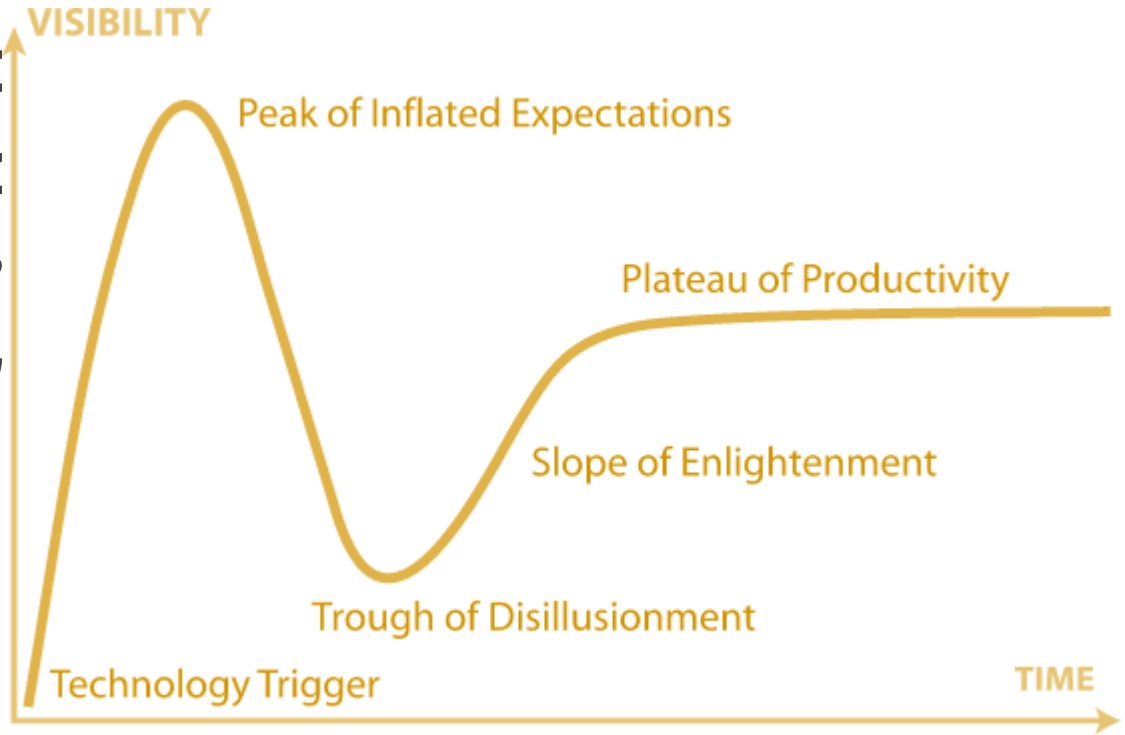
This project aims at driving disruptive advances in vision and language intelligence. We believe future breakthroughs in multimodal intelligence will empower smart communications between humans and the world and enable next-generation scenarios such as a universal chatbot and intelligent augmented reality. To these ends, we are focusing on understanding, reasoning, and generation across language and vision, and creation of intelligent services, including vision-to-text captioning, text-to-vision generation, and question answering/dialog about images and videos.

# Ecosystem in R

- Bayesian Inference via **Rstan**
- Tensorflow via **keras**
- Python tools via **reticulate**

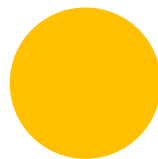
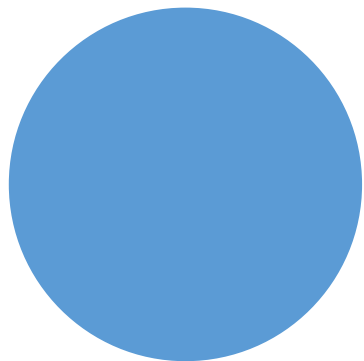
Is it all just hype?

*“We tend to c  
effect of a tec  
run and unde  
in the long ru  
- Roy Amara*





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# Demo with R and Power BI



# Q&A