Custom PC Build Recommender

Max Garber

Motivation

I built my PC in 2012 and need an upgrade

Faster PC for training NN and playing VR games

Too many options

General interest in new computer technology

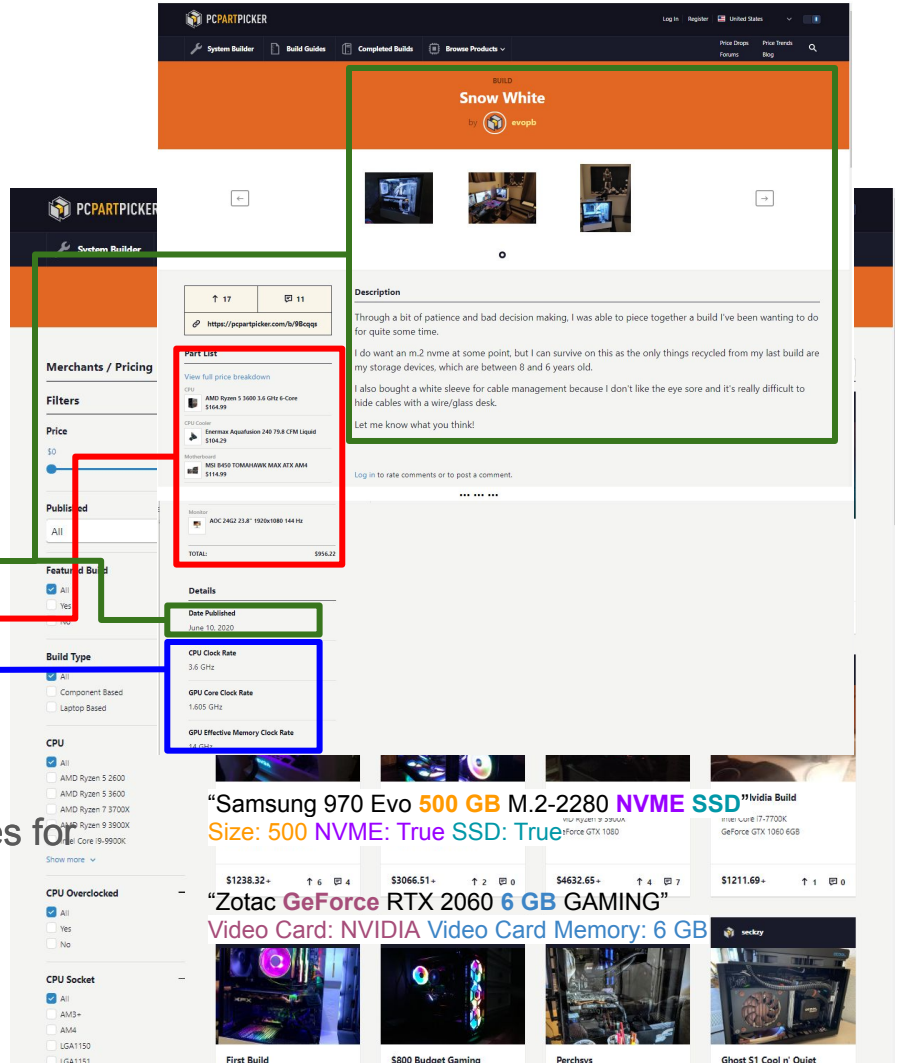
Question

Can I design a model to help build a new computer?

Data

Data Scraped from PcPartPicker.com

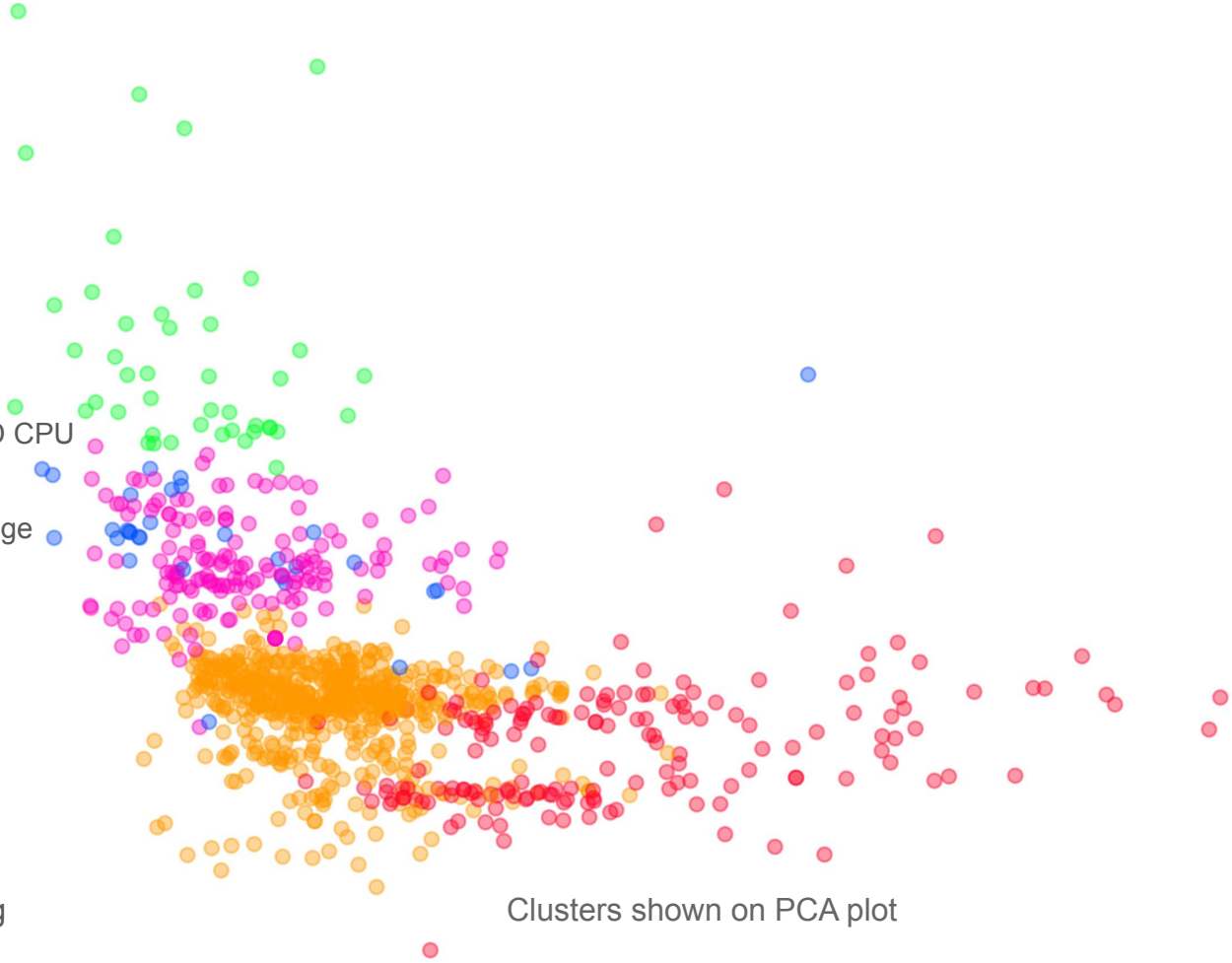
- List of builds most recent build
  - Name, Price, Author
- Detailed information of each build
  - Meta data: Description, Rating, Date
  - Part List
  - Summary Specs
- Detailed information of parts
  - Scraped specs for each CPU
  - Extracted information from the part names for everything else
- Combined and Cleaned



Clustering

Ward Hierarchical Clustering

- **General Purpose** $1200
  - No GPU
- **Budget** $800
  - Intel CPU favored over AMD CPU
- **Mid Range** $1100
  - More AMD GPUs then average
- **High End** $1800
  - Biggest category
- **Enthusiast Builds** $3200
  - Best of everything
  - NVIDIA GPU
  - Lots of storage



* Price not used as feature for clustering

Clusters shown on PCA plot

Recommender

Content-based recommender using the technical specs of the builds

Recommendations based on euclidean distance of scaled features

Mid Range

Name	Build Price	CPU	GB	Video Card
Nephew's first build	$1162.14	AMD Ryzen 5 3600 3.6 GHz 6-Core	1500	EVGA GeForce GTX 1660 SUPER 6 GB SC ULTRA GAMING
Mid tier Quarantine Machine	$1239.90+	AMD Ryzen 5 3600 3.6 GHz 6-Core	2512	MSI GeForce RTX 2060 6 GB VENTUS XS OC
Mid tier Quarantine Machine - Updated	$1339.89+	AMD Ryzen 5 3600 3.6 GHz 6-Core	2512	MSI GeForce RTX 2060 6 GB VENTUS XS OC
A31 R5RTX 3660 Backpack Build	$1437.08	AMD Ryzen 5 3600 3.6 GHz 6-Core	3000	Gigabyte GeForce RTX 2060 6 GB MINI ITX OC

Enthusiast Builds

Name	Build Price	CPU	GB	Video Card
My first build(Red Matter)	$4148.93+	AMD Ryzen 9 3900X 3.8 GHz 12-Core	2500	EVGA GeForce RTX 2080 Ti 11 GB FTW3 ULTRA GAMING
Wife: How much was that? Me: Oh not that much.	$4069.18+	AMD Ryzen 9 3900X 3.8 GHz 12-Core	2500	Asus GeForce RTX 2080 Ti 11 GB ROG Strix Gamin...
Sasuke Themed All White (Mostly) High End Gami...	$5031.20	AMD Ryzen 9 3900X 3.8 GHz 12-Core	2000	MSI GeForce RTX 2080 Ti 11 GB VENTUS OC
Corsair Whiteout	$1672.93+	AMD Ryzen 9 3900X 3.8 GHz 12-Core	2500	Gigabyte GeForce RTX 2080 SUPER 8 GB GAMING OC

Flask App

http://127.0.0.1:5000/

PC Build Recommender

Data From PcPartPicker: source data

Builds Quarantine Build

Min Price

Max Price

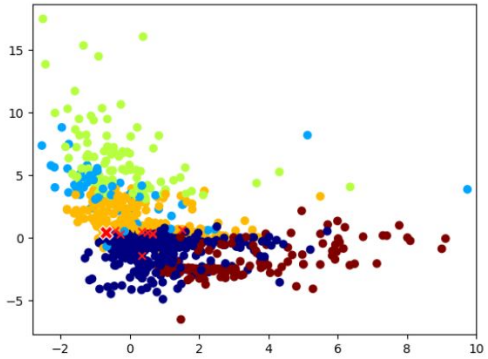
Plot Type SVD

Plot Color k means

Dimensionality Reduction

Multi Select

Quarantine Build Reset



Build Info

name_build : Quarantine Build

price_build : $1152.70+

description : I was planning on building this at the end of the year but 6 week isolation made me do this. This is my first pc build, and I thoroughly enjoyed it. Main reason for build is for gaming at 1440p, 144hz @120+ fps but currently only have a 1080p 60hz monitor, so I still have that to upgrade.

Recommendations

Quarantine Build
https://pcpartpicker.com/b/jzYH99

Benjammn's AMD Build
https://pcpartpicker.com/b/VV6RsY

Team Red in B/W
https://pcpartpicker.com/b/bDx6Mp

My first build https://pcpartpicker.com/b/8NQqqs

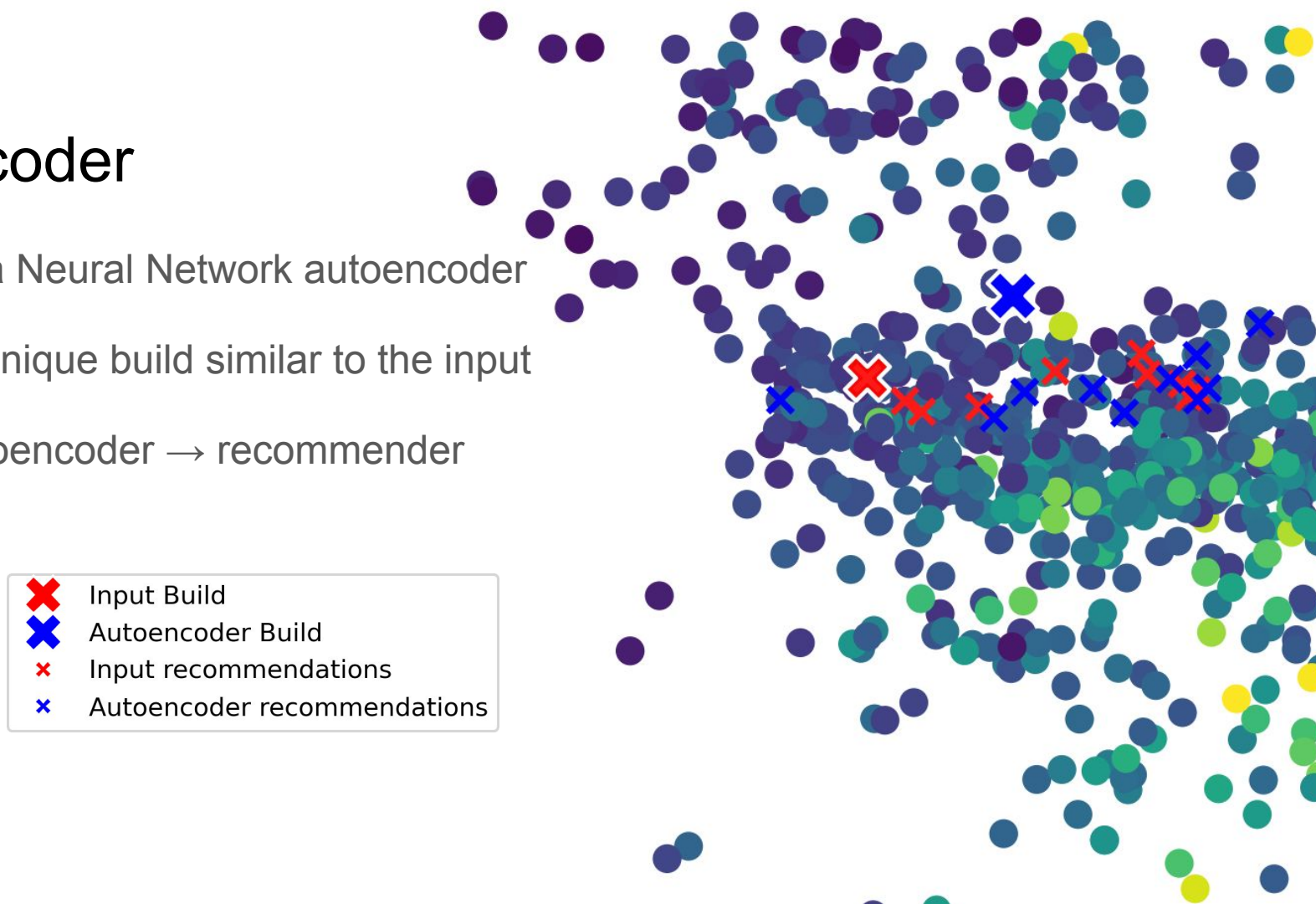
Max Garcet

Autoencoder

Developed a Neural Network autoencoder

Generates unique build similar to the input

Build → autoencoder → recommender



Thanks
G533 WIRELESS
logitech
AMD
RYZEN
RAZER
BLACKWIDOW
ROG STRIX EDGE
GAMING MOUSE PAD
RAZER GREEN SWITCHES
DDR4
2x8GB | 16GB
3200MHz
RGB PRO
RMx SERIES
RM650x
650 WATT
RM650x
crucial
MX500
1000GB
2.5-INCH SOLID STATE DRIVE
GEFORCE GTX
1660 Ti
TUF GAMING
MOTHERBOARD
X570-PLUS
X570
eSports DUO

Max Garber

github.com/bubblebooy

linkedin.com/in/max-garber