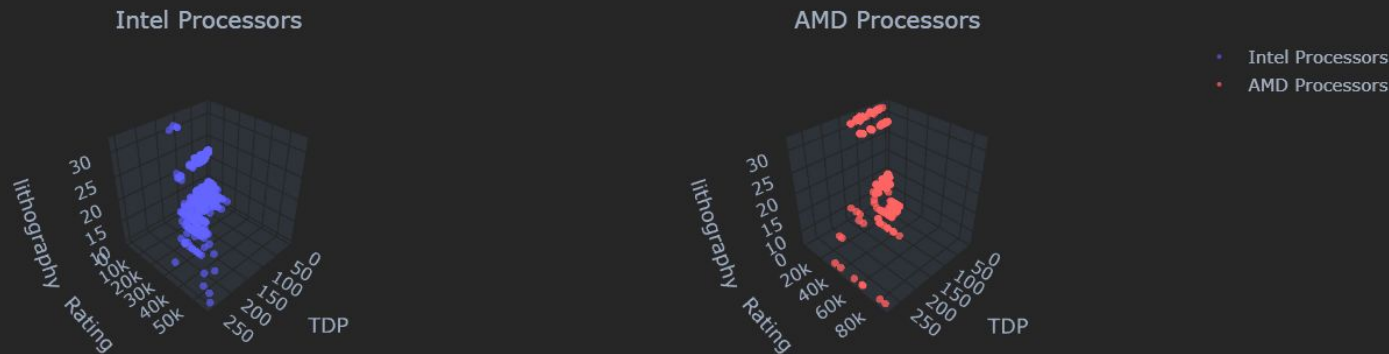


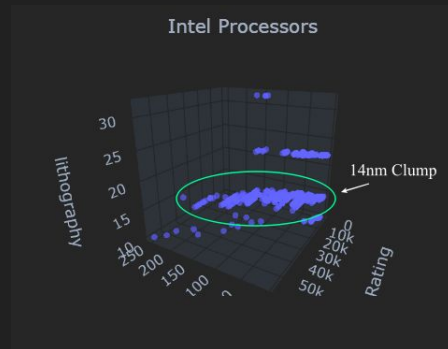
# Zachary Warsalla's Visualizations

Intel and AMD Processor TDP, Rating, and Lithography Relationship



This visualization shows the TDP, Rating, and Lithography of Intel and AMD processors in a 3D scatter plot. Here we can see some patterns from both types of processors. Naturally, we see that the highest performance rating achieved is always by the processors with the highest TDP and lowest lithography. The processors with the lowest performance are the ones on the highest (and oldest) lithography. As we reduce the lithography, we see the performance rating increase across the board.

The most interesting takeaway from this visualization is how we can see that Intel was stuck on the 14nm lithography far longer than AMD but was still able to achieve increasing performance—with a tradeoff in TDP.



# Zachary Warsalla's Visualizations

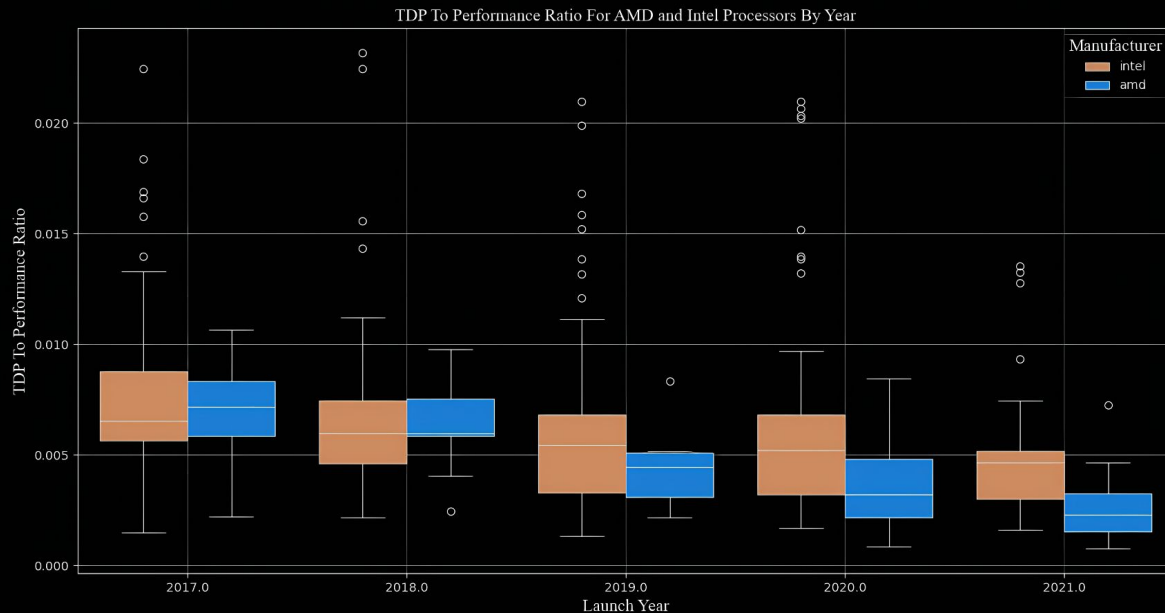


This visualization shows the average performance rating of i7 and Ryzen 7 laptop processors per year of release. From 2017 to early 2018, processors from both manufacturers had relatively similar performance, with Intel slightly in the lead.

After early 2018, we see Intel drop off significantly and continue to trail behind AMD until 2021. This can be explained by what we found in the previous slide—Intel was stuck on the 14nm lithography node for much longer than AMD, making it difficult to maintain a good performance-to-TDP ratio.

This ratio is very important for laptops, which have tight power constraints, especially for higher-end processors. Our next slide dives into this ratio a bit further.

# Zachary Warsalla's Visualizations



This visualization expands on the idea from the previous visual of the TDP-to-Performance ratio. It shows the TDP-to-Performance ratio of processors from both manufacturers from 2017 onward, where a lower ratio indicates better efficiency.

We can clearly see that after 2018, AMD maintains better average ratios with fewer outliers. This reinforces the narrative that Intel had been struggling with the 14nm lithography for years, which put them behind AMD in terms of TDP-to-Performance efficiency.