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Software and Programming for Architecture



Giuseppe Gallo - University of Palermo

Fulvio Wirz - University of East London

Giovanni Francesco Tuzzolino - University of Palermo



“If your girlfriend is pregnant,
google will know it before you do.”

Google's corporate mission is
“to organize the world's information and make
it universally accessible and useful.”

Google uses approximately **20 petabytes** of
user-generated data every day.
about 20.000.000 GB.

The first thing people do nowadays when they
have an issue is to search it on the Internet
using a search engine like Google.

More than **2 trillions** of research carried out
every year on Google (Sullivan, 2016)
that's about 63,000 research every second.

Digital Twins

Collected by Google

Searches performed
Watched videos
Ads displayed or clicked
Geographic Position
Websites visited
Apps, browsers and devices used
to access Google services

Provided by us

Name, date of birth and gender
Password and phone number
Email you send and receive on Gmail
Saved photos and videos
Documents created on Drive
Comments posted on YouTube
Contacts
Calendar events



What is Google Trends?

Google Trends is a platform, available since 2006 for anyone who wants to understand how often a keyword is searched on Google.

When questioned, **it does not report the total number of searches.**

It's based on a **query share**: searches carried out on a specific keyword within a geographic area in a time period is divided by the total number of searches made on google in the same area and period.

The **maximum value** of the query share in the given period **is normalized to 100** and the additional values indicate the deviation in the analysed time frame.

Google trends data is computed using a **sampling method** and the results vary a few percent from day to day.

Categories

Google allows to differentiate the search in:

30 main, and 250 secondary categories, according to a natural language classification engine, through a probabilistic assignment.

as example:

the **term** “apple” is assigned partially assigned to the categories, Computer and Electronics and Food & Drink.



Terms of research or Topics?

Search by **terms** also includes the keywords composed by the term we are looking for and all their meanings.

if we analyse the word “Architecture” in English, google trends it will not only count for “traditional” Architecture, but also Software Architecture

Search by **topics**, only possible when the amount of query is sufficiently large, collects terms of different languages that carry same meanings.

So if we look for the topic “London” we will get also the results for “capital of the UK”, “Londres”, etc.



Can we trust Google Trends?

More than **657 Scientific Researchs** exploited Google Trends since 2006
(Jun et al, 2018)

In 2009, a research published on Nature demonstrated that Google Trends traced and predicted the spread of influenza earlier than the Center for Disease Control and Prevention.

Corporations are using Google Trends to understand users behaviours in terms of
**Seasonality, Industry & Brand Monitoring,
Product Range Expansion, Longevity of Trends.**

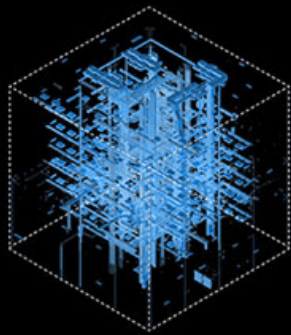


Five typologies of Tools

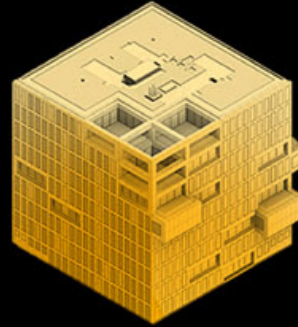
General Purpose
CAD



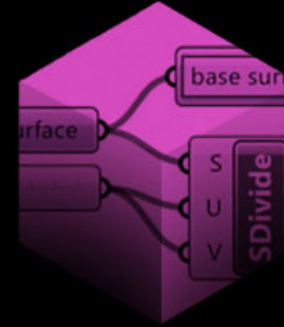
BIM



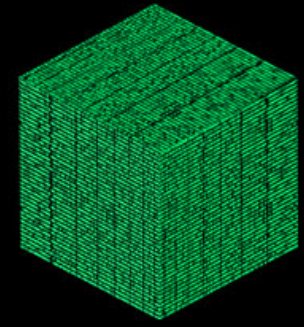
Render



Visual Programing
Languages



Programing
Languages



Autocad

Sketchup

3D studio Max

Rhinoceros

Cinema 4d

Revit

Archicad

Microstation

Allplan

VisualARQ

Vray

Octane Render

Maxwell Render

Corona Render

Renderman

Generative
Components

Dynamo

Grasshopper

C++

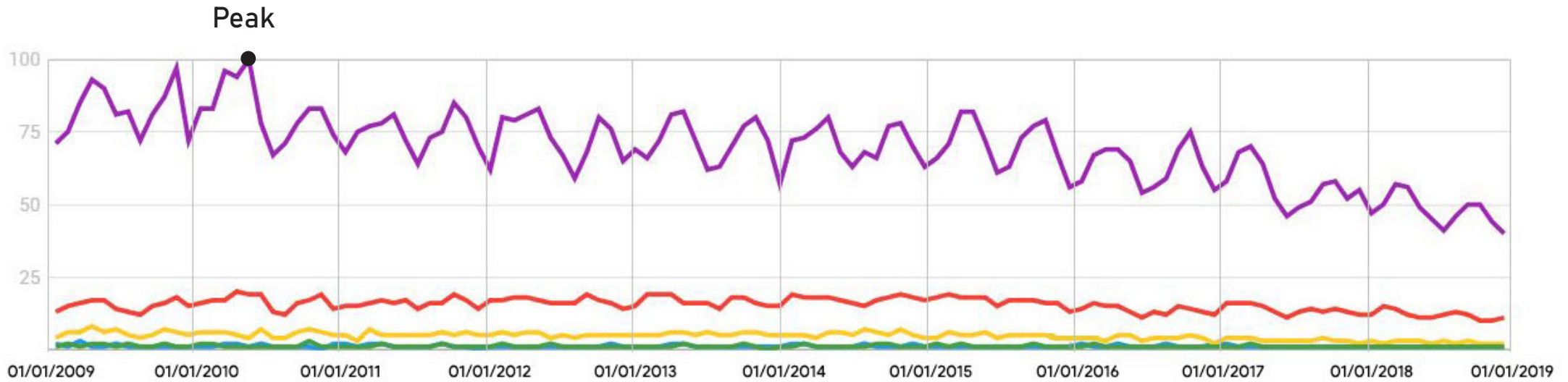
C #

Python

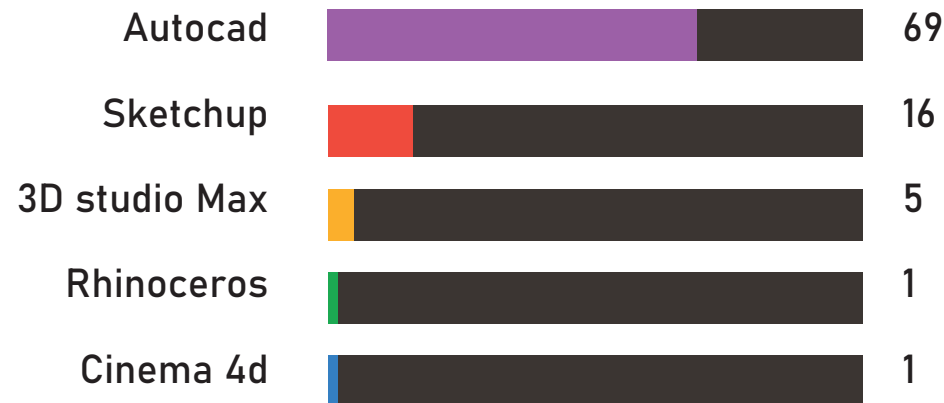
Visual Basic.NET

Ruby

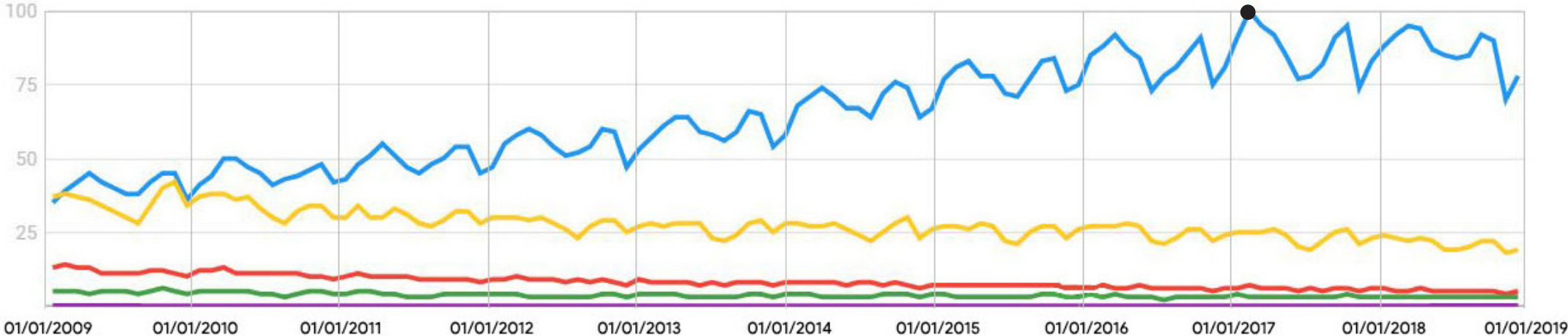
General purpose CAD 2009-2019



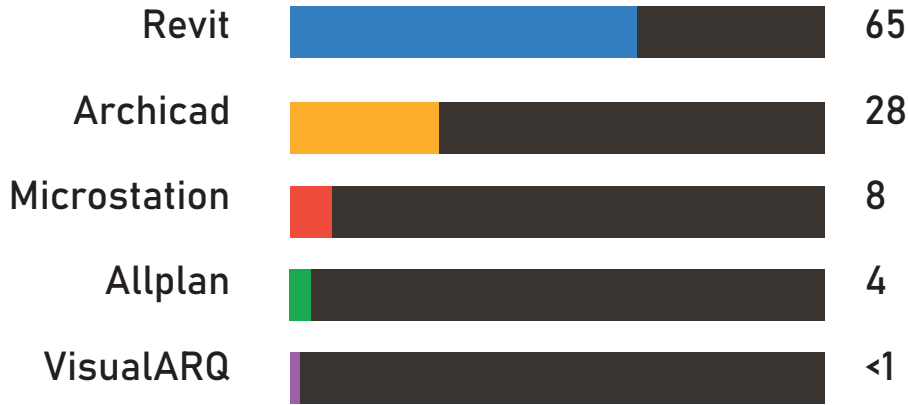
Query Share Average



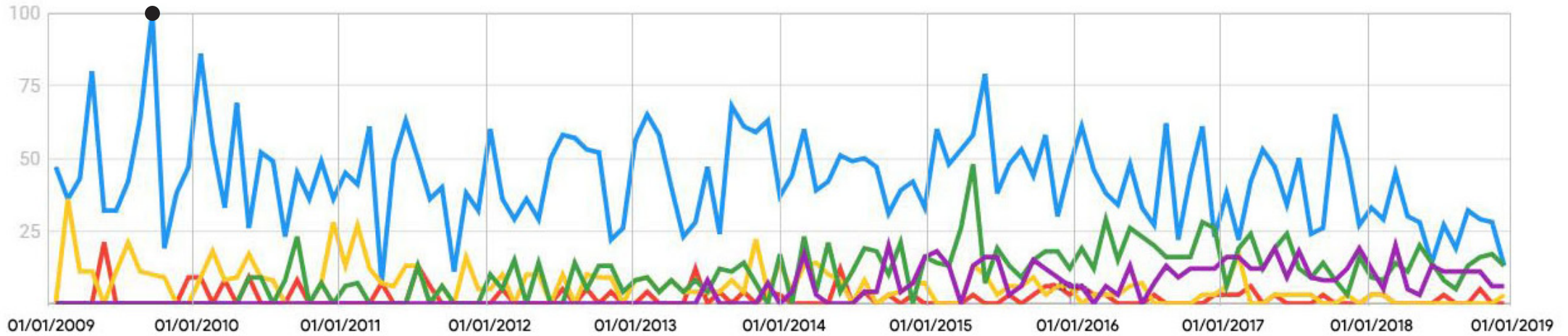
BIM 2009-2019



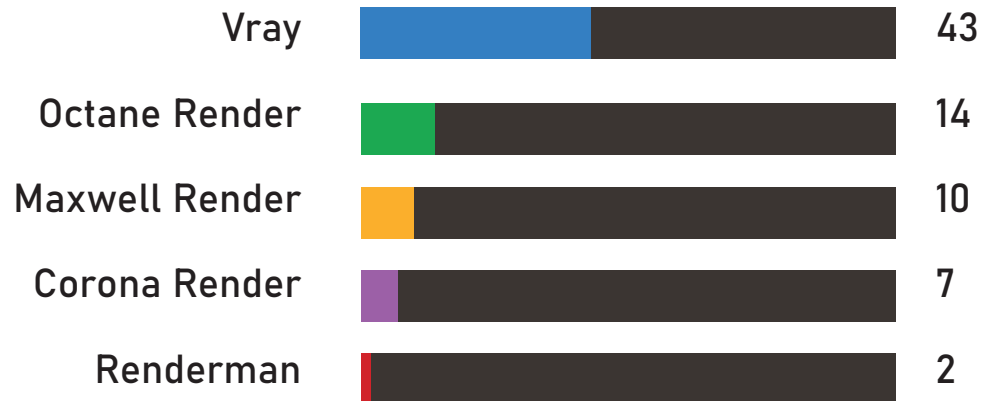
Query Share Average



Render 2009-2019

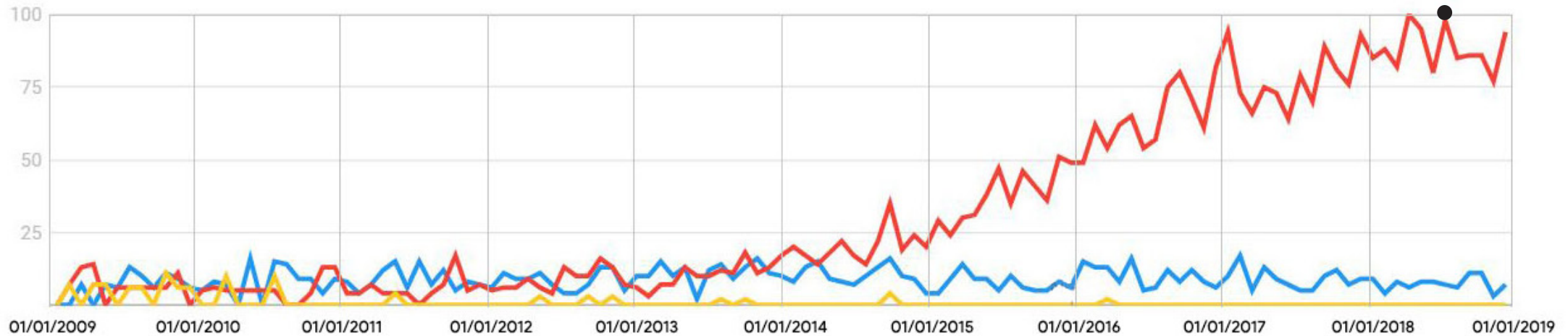


Query Share Average



Visual Programming languages 2009-2019

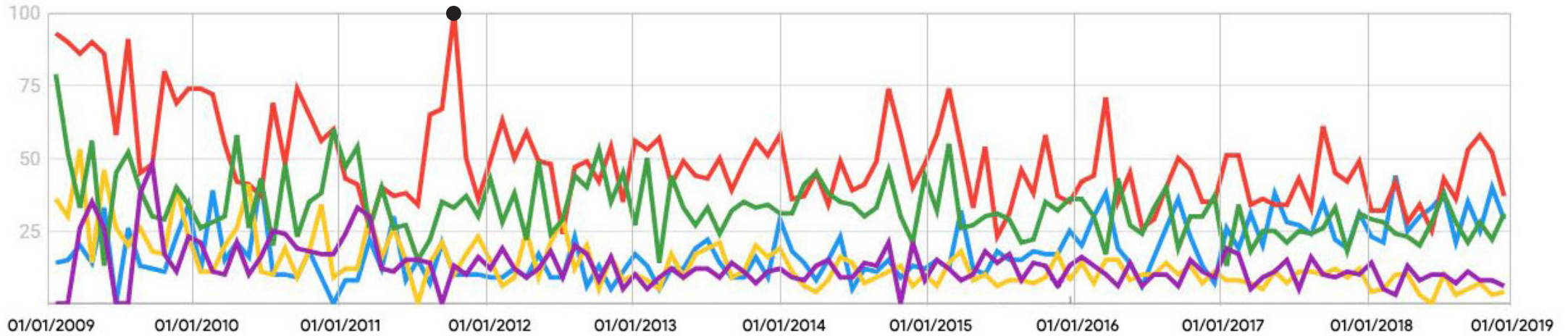
*search by terms



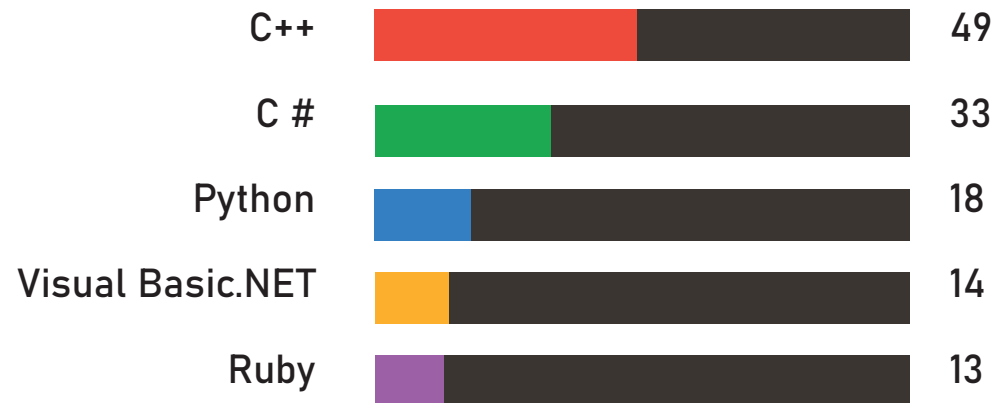
Query Share Average



Programing languages 2009-2019

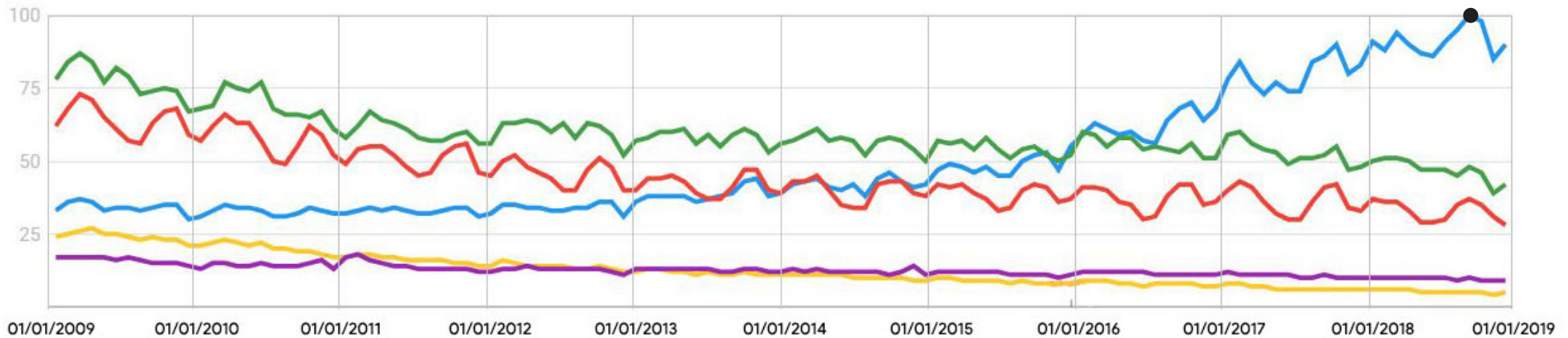
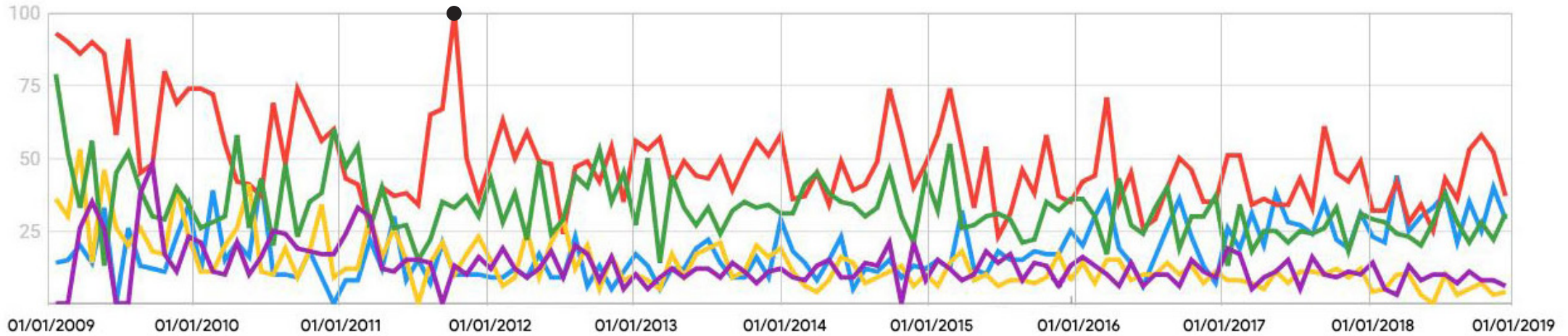


Query Share Average



Programing languages 2009-2019

Architecture

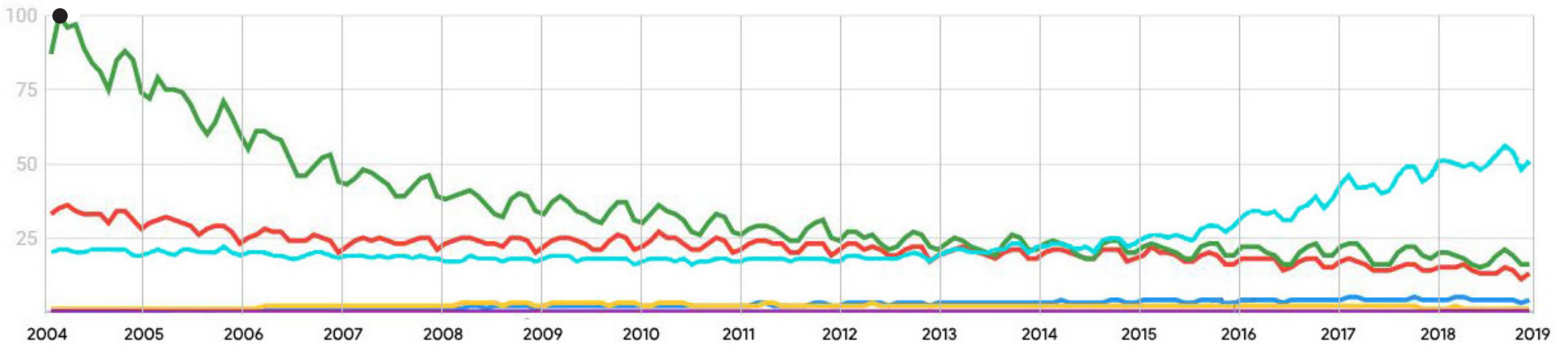
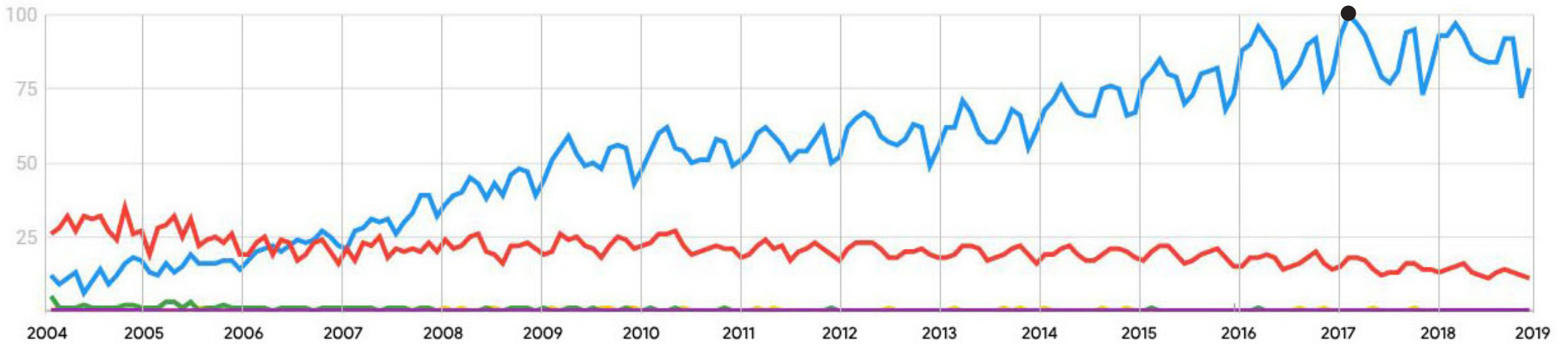


All topics

C++ C# Python Visual Basic.NET Ruby

Best of each type 2004-2019

Architecture



All topics

Revit Autocad Vray C++ Dynamo Python

Are Architects hostile to innovation?

Autocad, despite the reduced capacity and expandability for the computational design, maintains a role in CAAD.

Revit has become the most “interesting” software in the BIM type in last decade.

There is more interest on Dynamo than on Grasshopper.

The diffusion of programming in Architecture, despite the research carried out within the University e major architectural firms remains weak.

In our view the fragmentation of our sector seems to further increase.

Download the Full Paper on my website

[Architects as tool consumers: discovering trends in software and programming languages for architecture with google trends](#)

GIUSEPPE GALLO

Designer and researcher, MArch-Eng at University of Palermo, Phd In Architecture, Former visiting academic at the University of East London. Most of my Professional experiences are linked to [Mirabilia](#), communication agency founded in 2007 in Palermo, where as creative director I deal with communication design clients of different scale. Together with Mirabilia I have won several awards as Firefox Flicks, International design Award. My works have been published by Taschen, Design-Boom, Archdaily, World Architecture Community, Archilovers, and others. I am the main editor of [Archinerds](#), a curated social media gallery that deals with the relationship between image and architecture.

www.giuseppegallosdesign.com

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Photo Marita Madio