



State of .NET BUILD 2023 Recap

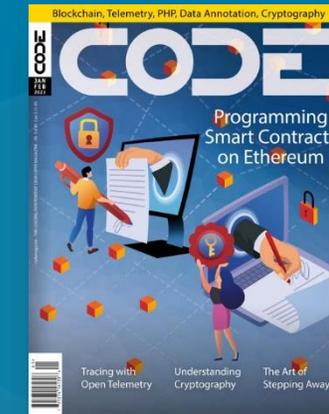
Markus Egger

President and Chief Software Architect
CODE Magazine, CODE Consulting, CODE Staffing

Kicking Things Off

Jim Duffy

- Director of Business Development
CODE Magazine & Consulting
- Former Developer – Drawn to the Dark Side: Now Responsible for
Marketing & Business Development
- jduffy@codemag.com / [My Bio](#)
- International Author and Speaker
- Former Microsoft RD (Regional Director) 9 years
- Former 11-time Microsoft Most Valuable Professional (MVP)
- Twitter: @jmduffy



The logo for CODE CONSULTING, featuring the word "CODE" in a large, white, stylized font with a horizontal bar through the top of the 'E', and the word "CONSULTING" in a smaller, white, sans-serif font below it, all on a red rectangular background.

CODE
CONSULTING

The logo for CODE GROUP, featuring the word "CODE" in a large, white, stylized font with a horizontal bar through the top of the 'E', and the word "GROUP" in a smaller, white, sans-serif font below it, all on a white background.

CODE
GROUP

The logo for CODE STAFFING, featuring the word "CODE" in a large, white, stylized font with a horizontal bar through the top of the 'E', and the word "STAFFING" in a smaller, white, sans-serif font below it, all on a dark green rectangular background.

CODE
STAFFING

"Helping People Build
Better Software"

The logo for CODE TRAINING, featuring the word "CODE" in a large, white, stylized font with a horizontal bar through the top of the 'E', and the word "TRAINING" in a smaller, white, sans-serif font below it, all on a blue rectangular background.

CODE
TRAINING

The logo for CODE MAGAZINE, featuring the word "CODE" in a large, white, stylized font with a horizontal bar through the top of the 'E', and the word "MAGAZINE" in a smaller, white, sans-serif font below it, all on an orange rectangular background.

CODE
MAGAZINE

About CODE Consulting



- Custom Software Development
- Web, Cloud, Mobile, Desktop, Serverless, Databases,...
- Copilot Development, AI, GPT & Azure OpenAI
- Application Security Testing
- User Interface and Interaction Design
- Project Rescue, App Modernization (VB, VFP, Access, etc.)
- Support & Maintenance for existing applications



About CODE Staffing

- Disrupting the world of staffing!
- Giving our customers the ability to have staff on par with Silicon Valley companies...
- ...and our employees a work environment in a bleeding-edge tech company with the industry leading benefits!
- www.codestaffing.com



We Need You!

- We are currently “hiring on all cylinders” across the entire CODE Group Organization!
- Check out www.codestaffing.com/careers



Upcoming CODE Group Events

• Training Classes

- Secure Coding for C# Developers (June 6 & 7)
- Introduction to Development with Open AI, ChatGPT, Azure Open AI, and more... (June 21)
- Secure Coding for C# Developers (Sept 5 & 6)



<https://www.codemag.com/training>

Free Subscription to CODE Magazine!



- The leading software development magazine written by expert developers for developers.
- All registered attendees will automatically receive a free digital subscription to CODE Magazine – no need to do anything, it'll happen auto-magically.
- Subscribers get CODE Focus issues free of charge!
- Please share this free subscription link:



<https://tinyurl.com/sodn052023>

CODE Mobile App

- Check out the new CODE Magazine Mobile application!
- Available for iOS & Android



CODE Security - Application Testing Services



- Are you sure your development team practices secure coding techniques?
- Have your application(s) been tested for security vulnerabilities?
- Are you prepared to share with your clients or customers that you've had a data breach?
- Reach out to us today about helping you change any No's to Yes's.
- codemag.com/Security

Build Cross Platform Apps With Photino

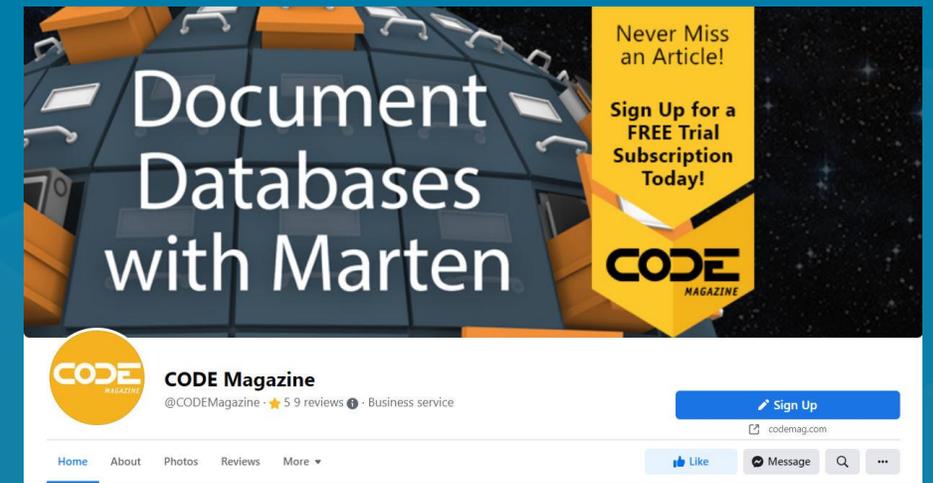
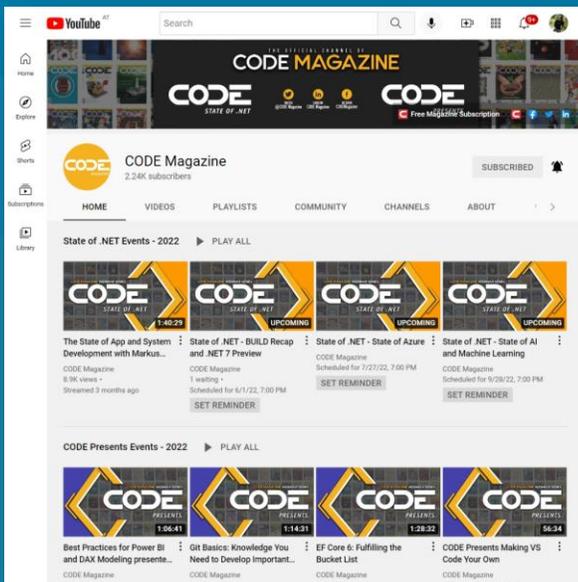
- Build native, cross-platform desktop apps that are lighter than light.
- Open-source framework for building native, cross-platform desktop applications with Web UI technology (HTML/CSS & JavaScript).
- Photino is maintained by the CODE Team with the help of the open-source community.

- tryphotino.io
- [Github.com/tryphotino](https://github.com/tryphotino)



Join Us On Social Media

- YouTube channel: <https://tinyurl.com/CODEYTC>
- Twitter: <https://twitter.com/CODEmagazine>
- Facebook: www.facebook.com/CODEMagazine/
- LinkedIn: <https://www.linkedin.com/company/code-magazine/>



Recordings & Slide Decks

- State of .NET Webinar Series
 - codemag.com/StateOfDotNet
- CODE Presents Webinar Series
 - codemag.com/CODEPresents

Recent Event Recordings

State of .NET - The State of .NET App and System Development 2/23/2022	State of .NET - .NET Conf Recap 11/17/2021
	
State of .NET - .NET 6 Preview 10/27/2021	State of .NET - Azure Architecture 9/29/2021
	

Event Survey – Win \$100!

- Complete this very short 12 question survey for a chance at a \$100 Amazon Gift Card!
- Survey must be completed by 11:59pm ET on Friday 6/2/2023 to be eligible!
- Name selected from registered attendee list. Completed survey is required to win.
- THIS SLIDE WILL BE REPEATED AT THE END AND SURVEY LINK REPEATED IN THE CHAT WINDOW!

State of .NET BUILD 2023 Recap

The survey will take approximately 4 minutes to complete.

Thank you for attending! Please complete this brief 12 question survey to be eligible to win a \$100 Amazon Gift Card. Your survey must be completed by 11:59pm ET (UTC-4) on 06/02/2023 to be eligible to win! One entry per person please. Drawing will occur and the individual winner notified by 06/09/2023.

Thank you for attending! Please complete this brief survey. Yes, we still want to hear from you if you were unable to attend but watched the recording instead.

* Required

1. Full Name *

Enter your answer

2. Company Name *

Enter your answer

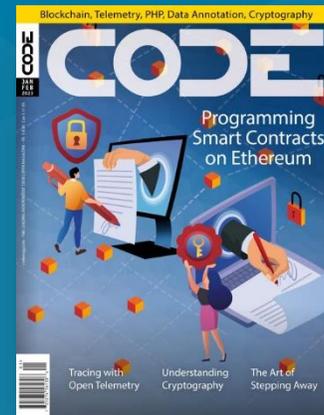
3. How would you rate the webinar? *

☆ ☆ ☆ ☆ ☆

<https://tinyurl.com/cs052023>

About the Presenter

- **Markus Egger**
- President and Chief Software Architect
EPS Software Corp. (dba CODE Consulting)
- Publisher – CODE Magazine
- International Author and Speaker
- Microsoft RD (Regional Director)
- Microsoft MVP 1995-2019
- [Email: markus@codemag.com](mailto:markus@codemag.com)
- [Twitter: @markusegger](https://twitter.com/markusegger)



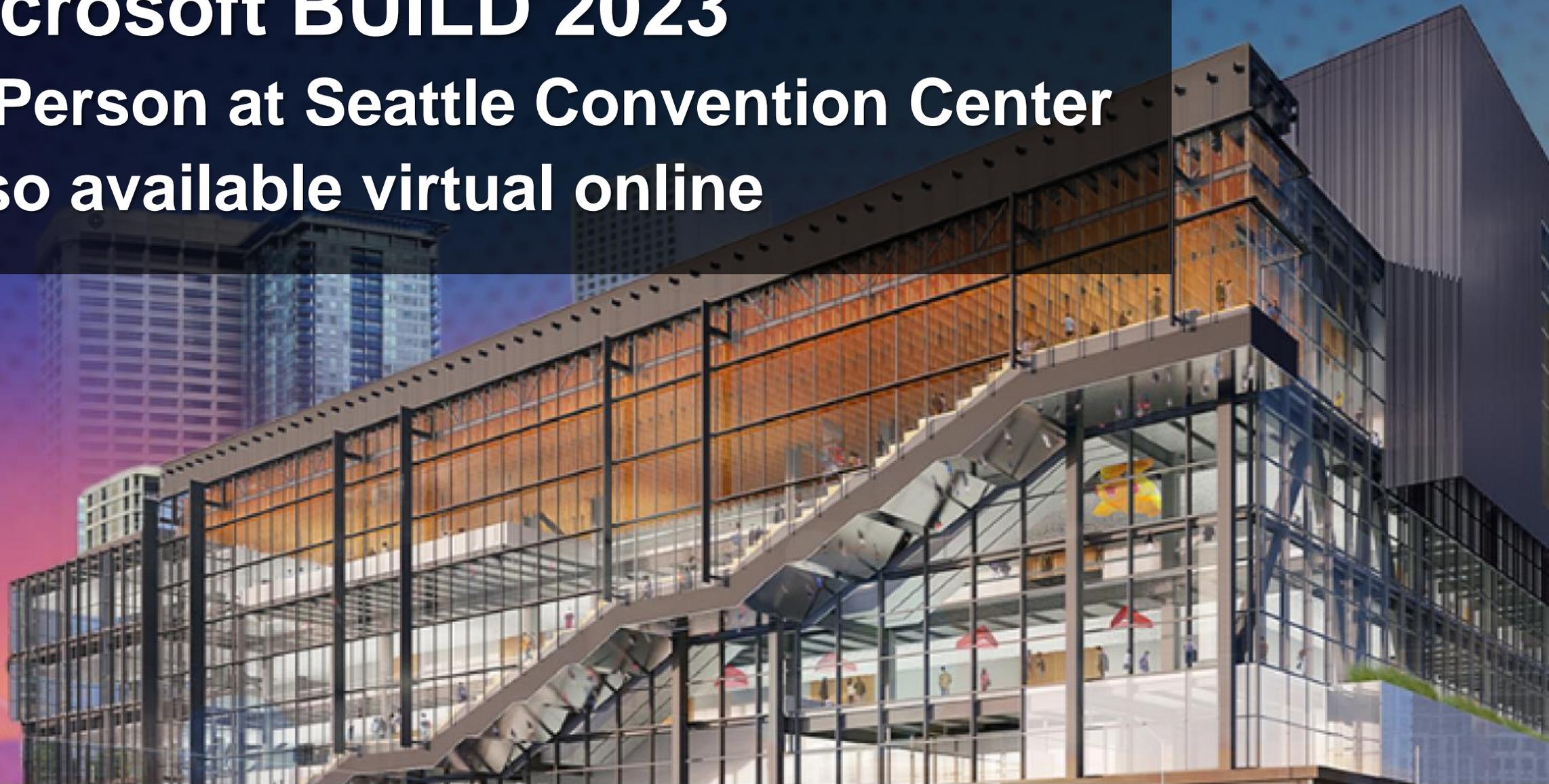
Agenda

- Where and what was Microsoft BUILD 2023?
- The most important BUILD Announcements
- The Era of AI and Copilot
- Lots of real-world examples of things we now do in production
- Some recommended further information

Microsoft BUILD 2023

In-Person at Seattle Convention Center

Also available virtual online



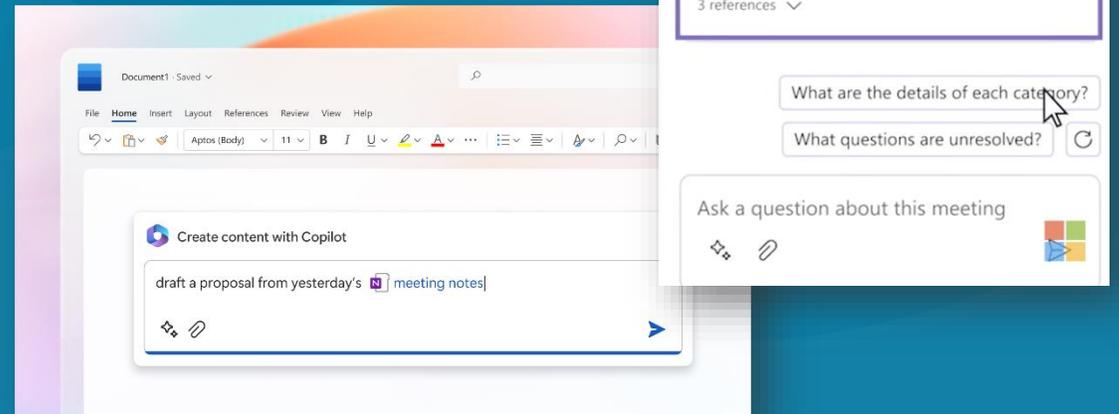
Summit at the Seattle Convention Center

The Era of Copilot

Living History

Microsoft Copilot – Everywhere!

- Microsoft is now introducing Copilot features in practically all applications
- Copilots are expected to drastically improve productivity
 - They already are today!
- <https://news.microsoft.com/reinventing-productivity/>



Github Copilot

- Github Copilot assists in writing code
 - Now used by over 1 million developers
 - Productivity gains of more than 50%!
-
- Check out the recording from our State of .NET Webinar and on our YouTube channel!



Bing Chat – “Edge Copilot”

The image shows a screenshot of the Bing website with the Bing Chat interface overlaid on the right side. The background of the website is a scenic view of a beach with a thatched roof in the foreground. The Bing logo and navigation links (Chat, Images, Videos, Shopping, Maps) are visible at the top. The user's name 'Markus' and a profile picture are also present.

Search Bar: A search bar is visible with the text "What is the weather going to be like tomorrow?" and a character count of "46/2000".

Bing Chat Interface: The chat interface is titled "Chat" and includes options for "Compose" and "Insights". The chat history shows a question: "Will the weather be nice enough today in Maui, Kihei, to go swimming or biking?". The chat status indicates "Searching for: weather Maui Kihei swimming biking" and "Generating answers for you...".

Chat Answer: The chat provides a weather forecast for Kihei, Hawaii, stating: "According to the weather forecast for Kihei, Hawaii, today's weather is **light rain** with a high of **82 degrees Fahrenheit** and a low of **69 degrees Fahrenheit**. The chance of precipitation is **42%**. You might want to check the weather again later before going swimming or biking. Stay safe!".

Learn more: A section titled "Learn more:" provides a list of links: 1. a.msn.com, 2. accuweather.com, 3. weather.com, and 4. mauiNOW.com.

Weather Card: A weather card for "Kihei, Hawaii" is displayed, updated a few minutes ago. It shows a temperature of 73°F (69°C), a precipitation chance of 16%, and a wind speed of 6 MPH.

Input Field: At the bottom of the chat interface, there is an input field with the placeholder text "Ask me anything..." and a character count of "0/2000".

Copilot in Excel

The screenshot displays the Microsoft Excel interface with a data table, a sales dashboard, and the Copilot AI assistant.

Data Table:

Average of Actual 2022	Newsletter No.	Newsletter Yes	Grand Total
None	\$94.68	\$107.65	\$97.63
Basic	\$74.60	\$140.29	\$125.69
Premium	\$239.29	\$293.78	\$281.21
Grand Total	\$112.57	\$202.64	\$157.61

Sales Dashboard:

- Monthly Sales:** A bar chart showing sales from Jan to Aug. The y-axis ranges from 100 to 800.
- Receivable:** A line chart showing receivable trends across categories: 30, 31-45, 46-60, 60-90, 90.
- Outstanding:** A donut chart showing a total value of \$26,340.

Copilot AI Assistant:

What new trends are we seeing in this month's sales data?

Customers who have a subscrip- or receive the newsletter tend to have higher average sales amounts than those who do not.

Newsletter No.	Newsletter Yes	Grand Total	
None	\$94.68	\$107.65	\$97.63
Basic	\$74.60	\$140.29	\$125.69
Premium	\$239.29	\$293.78	\$281.21
Grand Total	\$112.57	\$202.64	\$157.61

Insert table

Ask a question or request, or type '/' for suggestions

Copilot in Power Point

The screenshot displays the Microsoft PowerPoint interface with the Copilot sidebar on the right. The main slide is a vibrant purple and pink graduation-themed slide for Tasha. The slide features a circular portrait of a young woman with long dark hair, wearing a black leather jacket and sunglasses on her head. To the right of the portrait, the text reads "HAPPY GRADUATION" in white, with a graduation cap icon above the word "GRADUATION". Below this, the name "TASHA" is written in large, bold, white letters. The background is decorated with colorful confetti and abstract shapes.

The Copilot sidebar on the right contains the following text:

Copilot

Celebrate my daughter Tasha's high school graduation. She's graduating from Glenwood Springs, she plays soccer, does drama, and is in the electronics club, on the honor roll. Our advice to her is to be bold and adventurous!

Here's a draft with 9 slides, including sections for memories, accomplishments, and advice for the future.

Consider personalizing slides 7 and 9.

Undo

1 reference

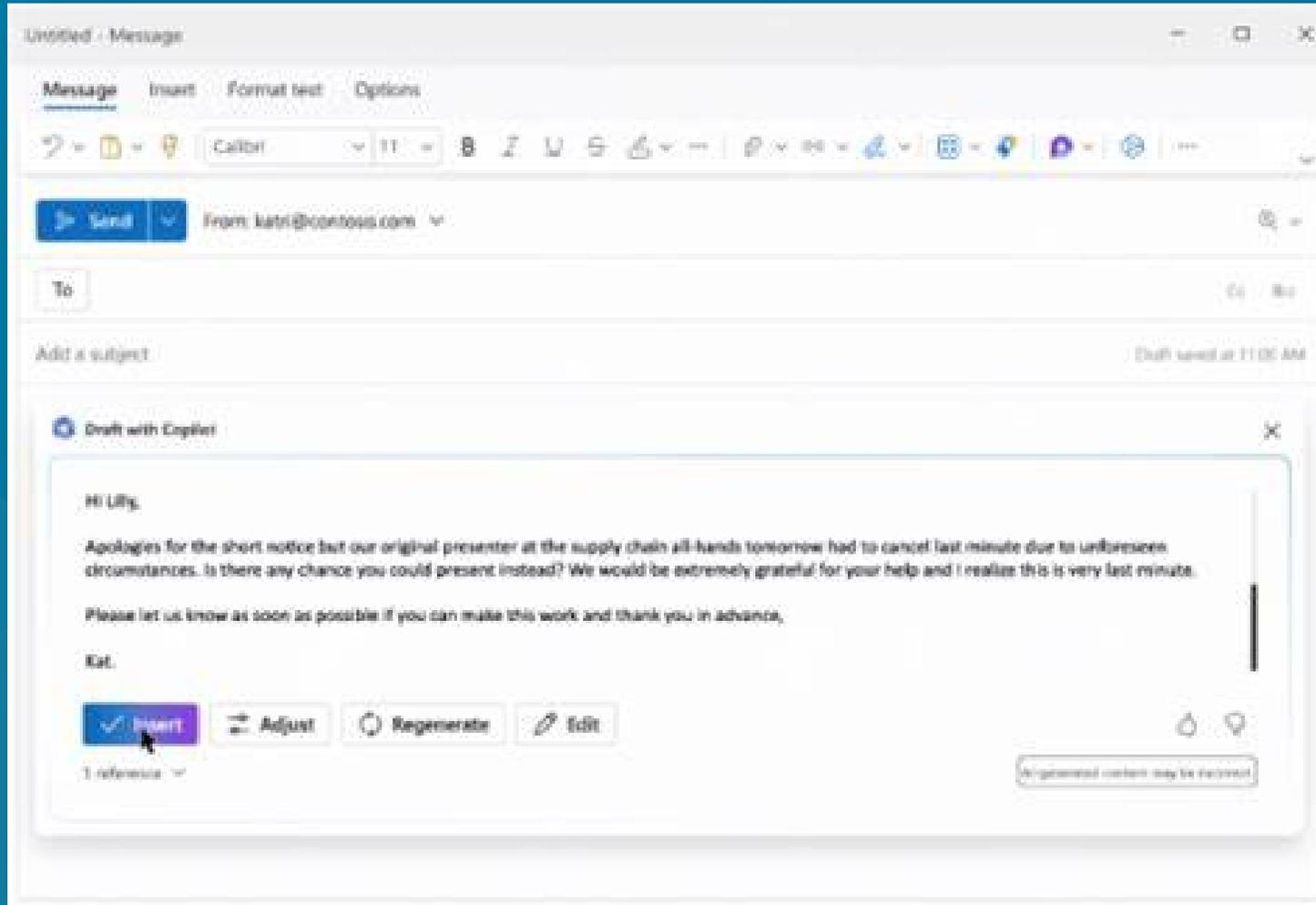
Add an image

Add animations

Describe what you'd like to create, or type / for suggestions

Keep it Adjust Regenerate Delete

Copilot in Email/Outlook



Copilot in Power Platform

The screenshot displays a Copilot chat interface overlaid on a data table. The table lists cities and their locations. The chat interface shows a sequence of prompts and responses:

- Prompt:** Add a column called Location and populate it with sample data. (Just now)
- Response:** Sure, here's the Location column with sample data. (Just now | Like, Reply)
- Prompt:** Give me suggested columns for the table. (Just now)
- Response:** Here are some suggested columns: description, status, and contact information. (Just now | Like, Reply)
- Action:** Add those columns. (Just now)
- Response:** We've added these columns: Description, Status, and Contact information. (Just now | Like, Reply)

City	Location
New York City	New York
Los Angeles	California
Chicago	Illinois
Houston	Texas
Philadelphia	Pennsylvania
Phoenix	Arizona
San Antonio	Texas
San Diego	California
Austin	Texas
Jacksonville	Florida

Copilot in Teams

The screenshot displays a Microsoft Teams meeting transcript for a meeting titled "Quarterly results and forecasts for Core Accounts". The transcript is organized into sections: Summary, Notes, and Tasks. A video player on the left shows a hand pointing at a screen with a 48m 42s duration. The right-hand side of the interface features a Copilot chat window with a question: "What other customers were discussed and what factors were considered?". Copilot's response, highlighted with a purple border, lists four points: 1. Only Lamna Healthcare and Proseware were discussed. 2. Barry was recommending Lamna Healthcare, but the consensus was Proseware was better placed due to supply chain efficiencies. 3. Based on surplus inventory levels, and customer demand forecast. 4. Proseware was identified as the best fit to possibly bridge the budget gap. Below the response are "Copy" and "4 references" options. Further down, two more questions are visible: "What are the supply chain challenges?" and "Why did Lamna Healthcare not get selected?". At the bottom, there is a prompt to "Ask a question about this meeting" with a search icon.

10 AM Open in Stream

Content

Proseware Proposal.pptx

48m 42s

Topics

negotiation strategy

round table

surplus

news

opportunities

approvals

Notes @ Mentions Transcript

Core accounts.loop Just now

Quarterly results and forecasts for Core Accounts

Summary

Based on what attendees said in the meeting

- \$230K revenue shortfall in this quarter
- Inventory 15% surplus (renewable products and recycled materials)
- Account leads to propose discounting scenarios to lower inventory surplus and meet sales budget
- Proseware was discussed as a leading opportunity

Notes

- Beth emphasized importance of Proseware negotiation strategy and need to be creative with offers - this is a must win deal. 1
- The team identified a new opportunity with Proseware that could enable us to exceed quota for the quarter - need to prioritize ASAP.

+ Add note

Tasks

- Follow up with finance today to discuss Proseware proposal and secure discounting approvals. @Samantha Cantrall Set due date
- Set agenda for next week's follow-up meeting. 2 @Beth Andrews 3/17/2023

Copilot 11:30 AM

this meeting.

11:30 AM

What other customers were discussed and what factors were considered?

- Only Lamna Healthcare and Proseware were discussed. 1
- Barry was recommending Lamna Healthcare, but the consensus was Proseware was better placed due to supply chain efficiencies. 2
- Based on surplus inventory levels, and customer demand forecast. 3
- Proseware was identified as the best fit to possibly bridge the budget gap. 4

Copy 4 references

What are the supply chain challenges?

Why did Lamna Healthcare not get selected?

Ask a question about this meeting

Copilot in Windows

The screenshot displays the Windows Copilot interface. On the left, the Adobe Express application is open, showing a design workspace with a 'Fourth Coffee' logo. In the center, a Teams chat window is visible, showing a conversation about the logo. On the right, the Copilot chat interface is active, providing suggestions and actions based on the context. The chat includes a helpful message about Adobe Express, a link to learn more, a question about creating a logo, and a confirmation to launch Adobe Express. Below this, the Copilot has pasted the logo image and offers several actions: 'Send to Will Little in Teams', 'Explain to Will Little ideas behind this logo', 'How do I theme my document using this logo?', and 'Ask me anything...'. The Windows taskbar at the bottom shows the date and time as 11:11 AM on 5/24/2023.

You can also use Adobe Express to create logos for your plugin with thousands of beautiful templates and assets for social media content, logos, and more. You can select or upload your own images, try different layouts, add text to photos, and apply effects and filters in a snap.

I hope this helps! Let me know if you have any other questions.

Learn more: [1. Adobe.com](#), [2. elementor.com](#), +1 more

Would you like to create a logo for your business using Adobe Express?

Logo templates

Yes

Sure! Launching Adobe Express

Pasted from the page

What do you want to do with the image?

Send to Will Little in Teams

Sending FourthCoffee-Logo.png to Will Little in Teams

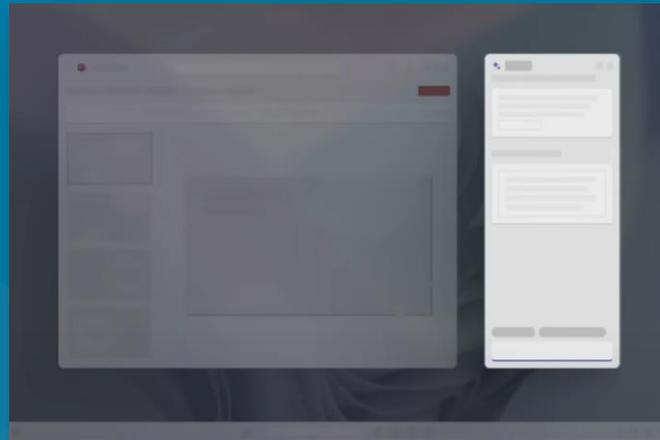
Explain to Will Little ideas behind this logo

How do I theme my document using this logo?

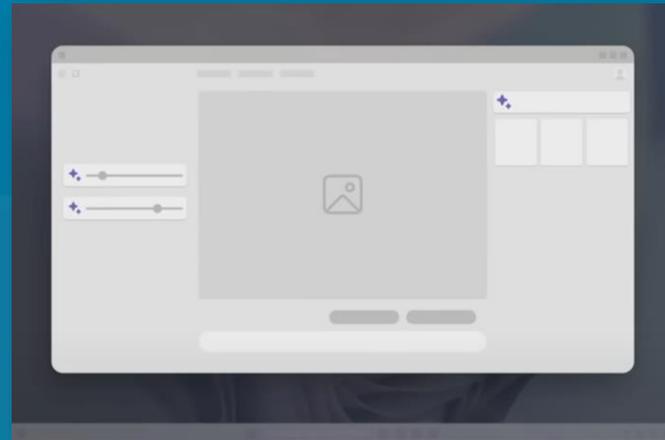
Ask me anything...

Current Copilot UI Paradigms

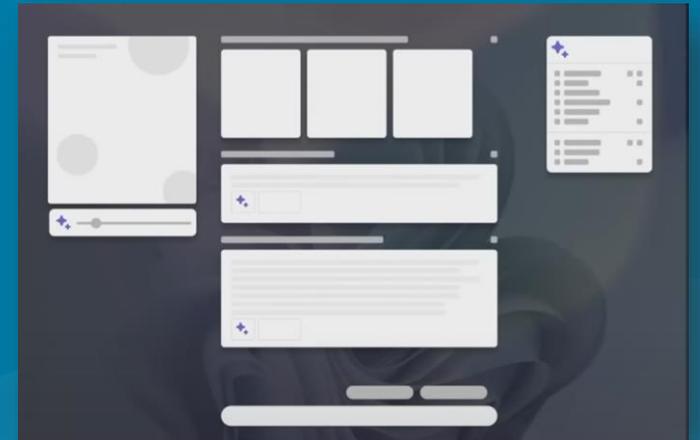
Beside



Inside



Outside



Resulting Characteristics of Copilots

- Drastically improved productivity
 - Expected to improve 50%+ every year!
- Every year, twice as good. Every year, 1/10th of the cost.
- The situation is evolving extremely fast.
 - Faster than the Web wave was.
 - Faster than the Mobile wave was.
- We just went from “Software is eating the world!” to **“AI is eating software!”**.

Resulting Characteristics of Copilots (cont.)

- We are only at the very beginning of all this. We are basically dealing with the AI equivalent of toddlers 😊
- No true Singularity will result from this, but...
 - ...this may well be the start of drastic societal changes that makes the Industrial Revolution look like child-play.
 - ...AI may create security and regulatory nightmares

Copilots are Extensible!

- Copilots are a new development ecosystem!
- You can extend Copilots in various ways
- You can also build your own copilots
- The expectation is that in the future, **all of us will be developing a lot of Copilots!**

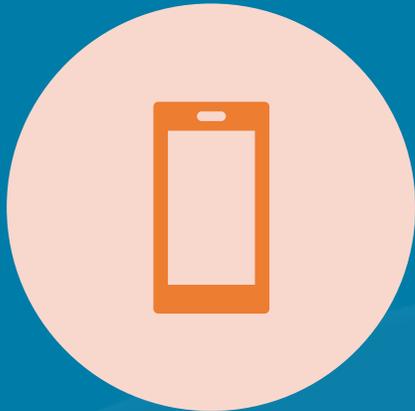
**All apps without
Copilot features
are now legacy!**

AI & Machine Learning in Practice Today

Our Capabilities Today

- Narrow Learning (Deep and Shallow)
- No real General Artificial Intelligence
 - Although that term is also used in confusing ways
 - I also question whether “general” AI is all that critical for our purposes
- The results we can already achieve are both mind-boggling and very practically useful

Using AI Today



BUILT INTO APPS AND
SERVICES



DEVELOPING AGAINST
PRE-TRAINED AIS



TRAINING YOUR OWN
AIS

Azure Cognitive Services

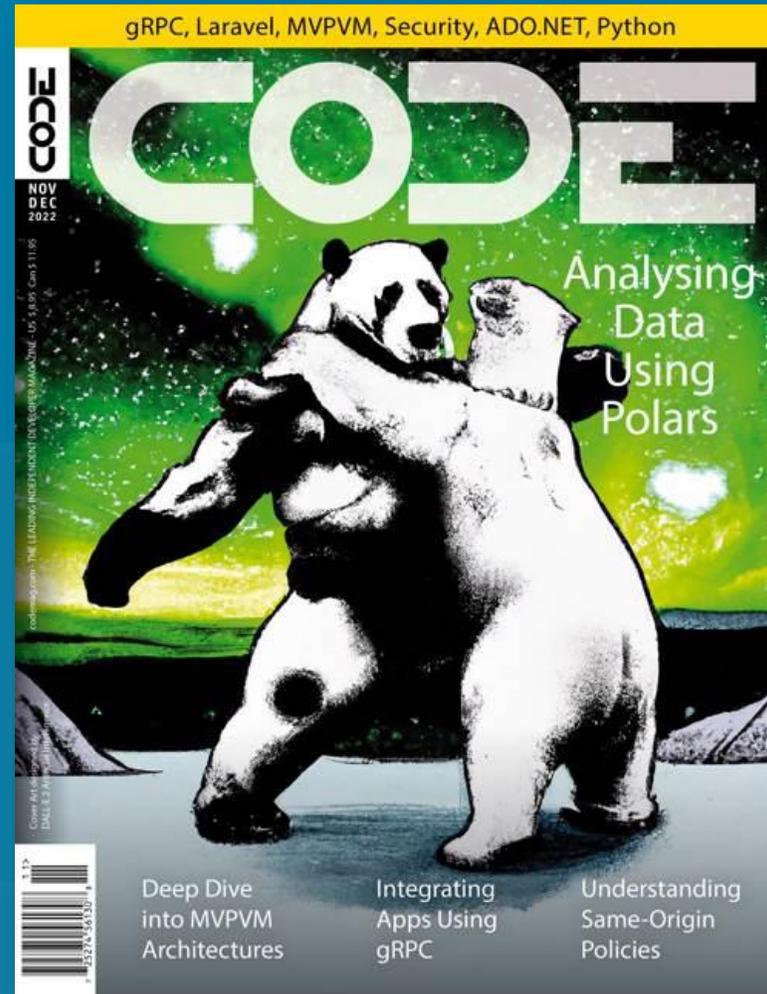
- Speech
 - Speech to text, text to speech, translation, speech and speaker recognition
- Language
 - Sentiment analysis, translation, question answering, conversation, reco,...
- Vision
 - Computer vision, custom vision, face recognition
- Decision
 - Anomaly detection, content moderation, personalization
- **Azure OpenAI Services**

Who is OpenAI?

- Non-Profit OpenAI Incorporated
- For-Profit OpenAI Limited Partnership
- Founded in 2015 in San Francisco
- Microsoft made a \$11 billion investment and reportedly owns 49% of OpenAI LP
- All OpenAI Infrastructure runs on Azure

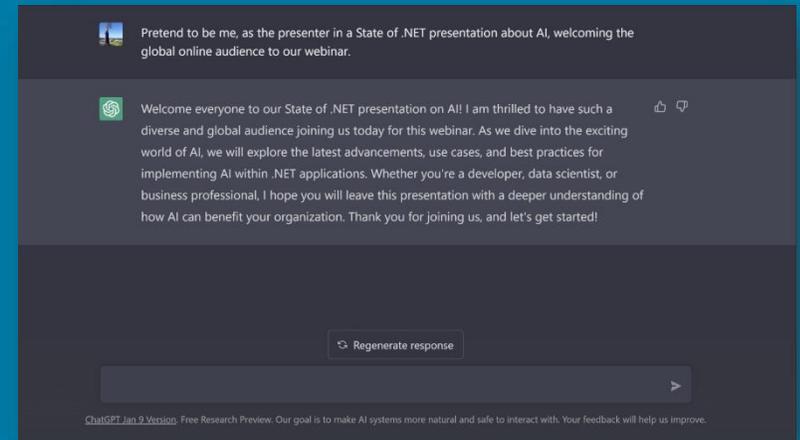


OpenAI – DALL-E 2



OpenAI's ChatGPT

- *GPT = Generative Pre-Trained Transformer
- You have probably heard about this 😊
 - Although just very recently
- A technological leap that forms the basis for a lot of new tech
- Microsoft is very heavily invested
- **ChatGPT is essentially a tech demo!**
 - Although it is in the process of becoming a bit more...



LLMs – Large Language Models

- LLMs are essentially “text calculators” or “text predictors”
- They are very good at generating text that answers questions or provide a back-and-forth discussion

The Scale Involved



Azure OpenAI for Developers

- OpenAI features are now available to use in our own applications through Azure OpenAI
 - You can currently sign up for approval
- Azure OpenAI provides access to OpenAI features with all the added Azure benefits
 - It is also possible to use OpenAI features directly from OpenAI, but the Azure version already adds a lot, and will likely add more in the future
- This provides an API that allows us to create our own Copilot-style features

Developing Copilots

- Copilots are a combination of a variety of technologies
- LLMs drive the human-like comprehension and responses
- Other AIs provide additional data
- Conventional data sources can be included as well
- There is some sort of Copilot UI that ties it all together
- Copilot needs to “drive” the application(s) involved
- Note: ChatGPT is now also evolving into an extensible platform

Copilot Request Flow

Request is entered

Intent is determined

The intent is often curated

Additional data is retrieved and ingested (RAG)

An answer is prepared

The answer is often curated

Output is generated

Repeat 😊 (with all the context preserved)

Side-Note: Many Other Scenarios!

- OpenAI functionality is useful for many things beyond Copilots
- Example: CODE Legacy Analyzer

Side-Note: ML.NET

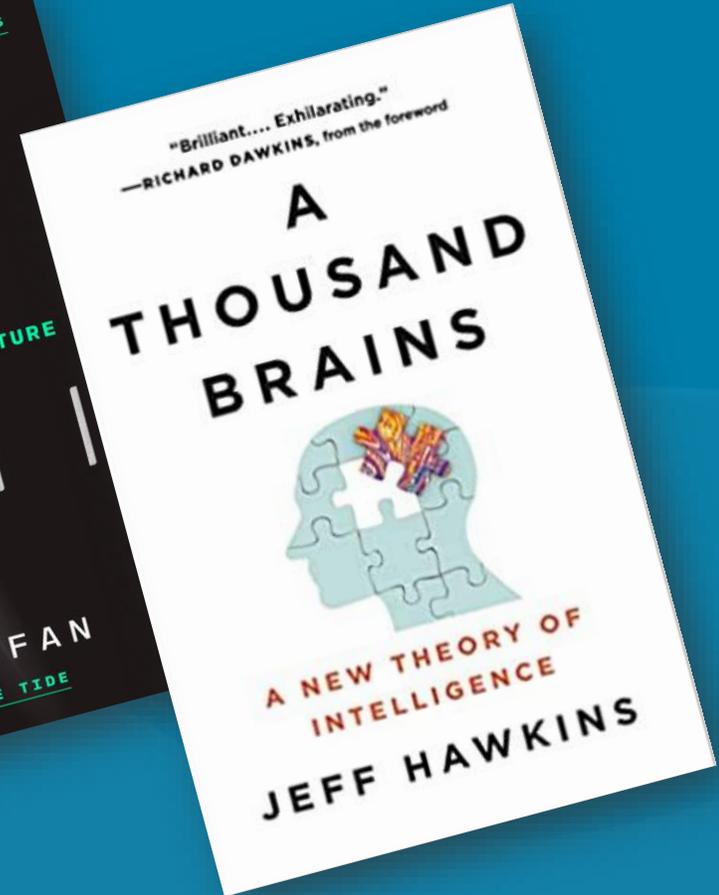
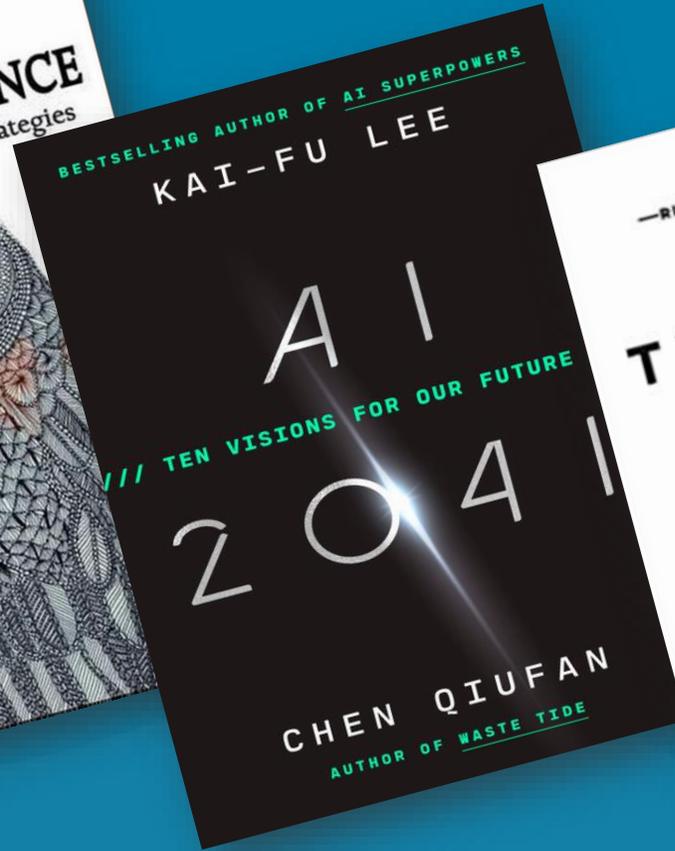
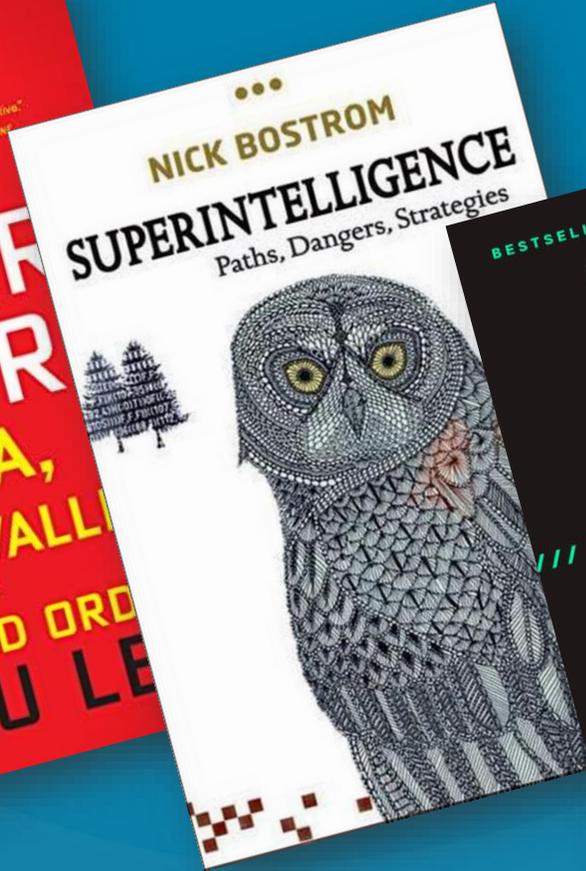
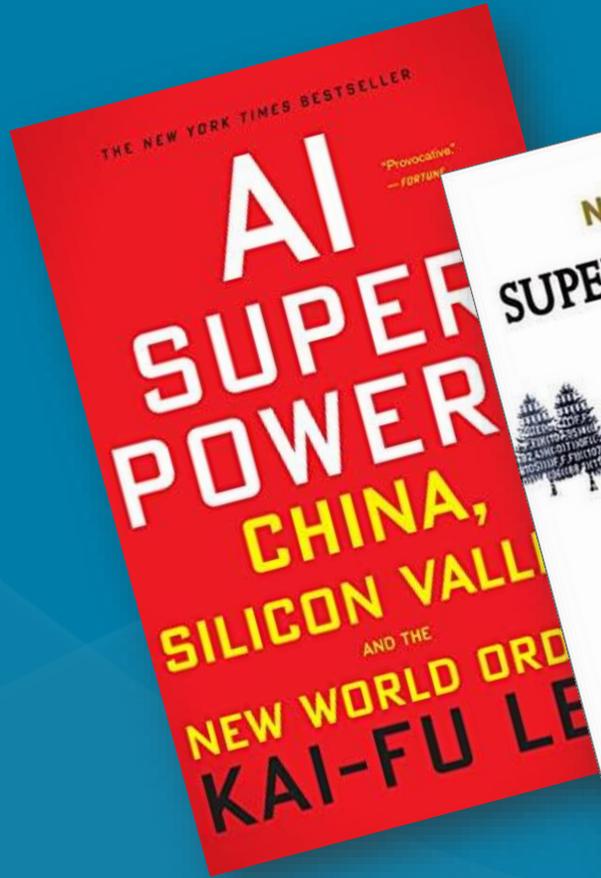
- Machine Learning library for .NET developers
- Supports shallow and deep learning for narrow models
- Execution and training in all .NET applications
- Great for developers who already know .NET
- Support for model standards, such as ONNX or TensorFlow

Further Reading/Watching

Sessions to Watch – build.microsoft.com

- Day 1 Opening Keynote(s)
 - Microsoft Build opening
 - The era of the AI Copilot
 - Next Generation AI for developers with the Microsoft Cloud
- Day 2 Keynote (especially the Panos Panay part)
 - Shaping the future of work with AI
- State of GPT
- Inside Azure innovations with Mark Russinovich
- Day 3 Closing Session – Scott and Mark Learn to Code

Recommended Reading



Other Announcements

CODE Training:



Development with OpenAI,
ChatGPT, Azure OpenAI, and more...

Upcoming CODE Group Events

• Training Classes

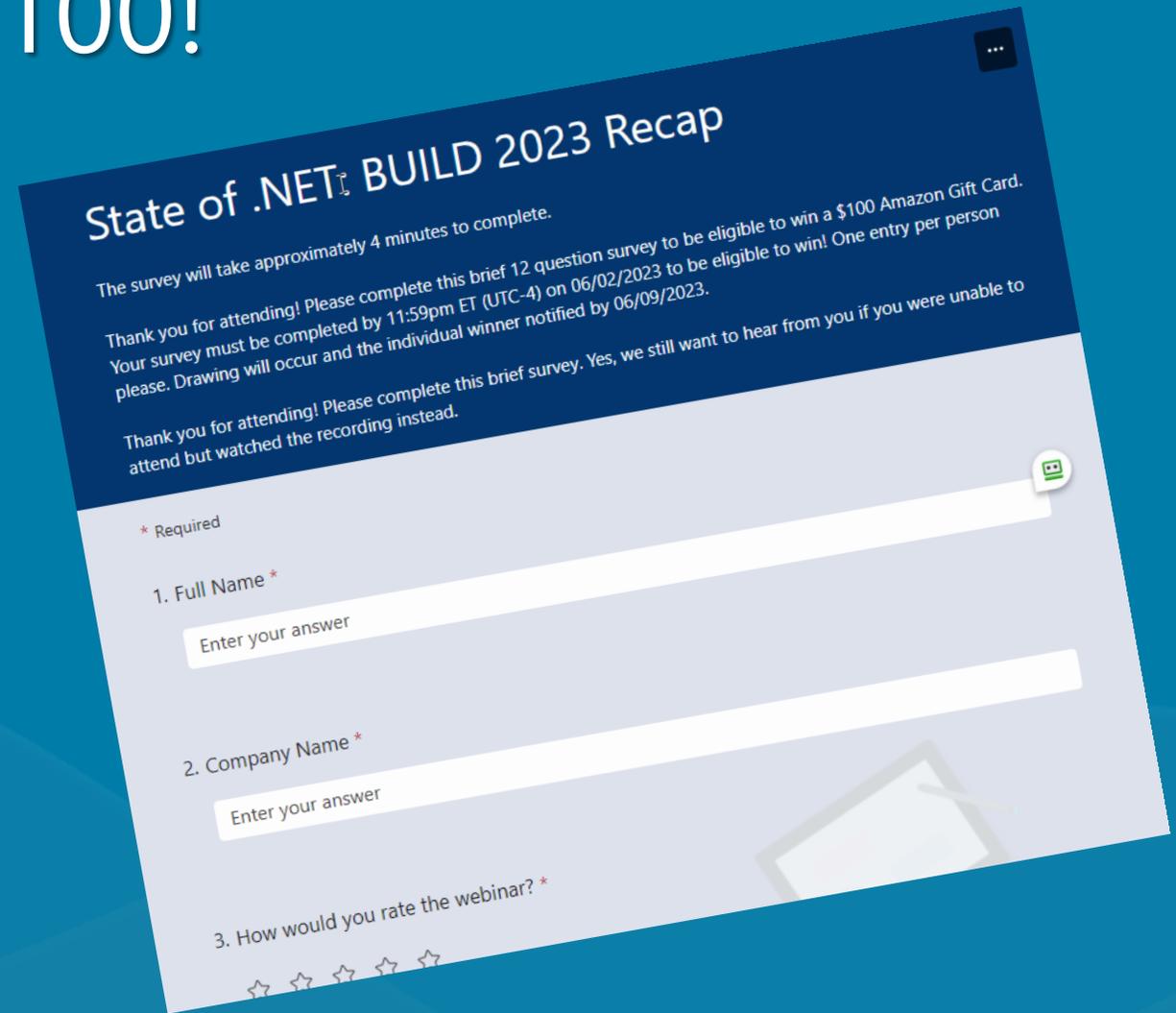
- Secure Coding for C# Developers (June 6 & 7)
- Introduction to Development with Open AI, ChatGPT, Azure Open AI, and more... (June 21)
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* Required

1. Full Name *

Enter your answer

2. Company Name *

Enter your answer

3. How would you rate the webinar? *

☆ ☆ ☆ ☆ ☆

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State of .NET - .NET 6 Preview 10/27/2021	State of .NET - Azure Architecture 9/29/2021
	

CODE AI & CODE Copilot

- Helping companies implement AI features is now a major service we offer
- This is especially true for copilot-stye features in existing and new applications
- Contact us for more information and to schedule a free demonstration and/or brainstorming session
- info@codemag.com
- www.codemag.com/ai



CODE
SKUNK WORKS



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- All registered attendees will automatically receive a free digital subscription to CODE Magazine – no need to do anything, it'll happen auto-magically.
- Subscribers get CODE Focus issues free of charge!
- Please share this free subscription link:



<https://tinyurl.com/sodn052023>

Contact us with Questions!

CODE/EPS Contact

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twitter.com/codemagazine

Presenter Contact:

markus@codemag.com

