

Webinar: ChatGPT: Water sector applications

Question Details

#	Question	Answer
1	Will this webinar be recorded?	live answered
		Yes, the recording will be available within 2 business days on the AWS YouTube channel. Thank you thanks
	My question is around what considerations are there for staff using sensitive data as prompts for the language model. Is there a risk that sharing intellectual property may result in that data being incorporated into the models future training? Should an organisation develop guidelines around what information can be supplied to the service?	G'day Brent, For the more popular LLMs it's unlikely the prompts you provide will be directly used to train the model in the future, developers would need to filter out the rubbish prompts (ie 2 + 2 now equals 5). I would be careful using proprietary or confidential information when prompting LLMs anyway because there's no guarantee the data won't be leaked or accessed another way. There's been a few news articles on leaked data of recent like this: https://www.laptopmag.com/news/do-not-share-your-secrets-with-chatgpt-this-leak-shows-why there was also a bug with chatgpt a couple months back when other users prompt history was being shared between accounts.... depending what service your organisation provides guidelines or restrictions should be implemented now its grown in popularity
		Should organisations push for secure (either locally hosted or private cloud) versions of these services? organizations are concerned about inadvertently using confidential information for training an AI, also how to QA/QC the AI responses. We're definitely working on internal guidelines for how to incorporate AI as well as when you shouldn't.
3	Realistically most Hydrologic DATA should all be Open Source ?	Realistically most Hydrologic DATA should all be Open Source ? 100% agree Rudy
4	Could we force the LLM to focus the search space to a specific region or time period and tune the output?	Thanks, this is a very relevant question. In fact this happened to Samsung electronics not too long ago when they were using ChatGPT. ChatGPT has now implemented a possibility to opt-out of your data being used in training etc. It is also important to note that this was with ChatGPT whilst their API has different (more confidential) use policies
		Yes you just need to provide the right prompt, this might cause a hallucination though so exercise with caution
		I asked GPT4 to clarify, see response below: Yes, you can guide ChatGPT to focus on a specific region or time period by providing more explicit instructions in your input. You can also fine-tune the model on a dataset tailored to your desired context in order to improve its performance in generating relevant responses. Here's a brief overview of these two methods: Providing explicit instructions: When you ask a question or provide a prompt, make sure to include details about the region or time period you're interested in. For example, instead of asking, "What were the primary occupations of people?", you could ask, "What were the primary occupations of people in ancient Egypt?" This helps the model to narrow down its search space and generate more focused responses. Fine-tuning the model: You can create a custom dataset that focuses on your desired region or time period and use it to fine-tune ChatGPT. This will help the model become more knowledgeable and generate more accurate responses in the specified
5	How can AI language models help address issues of social and environmental justice in water management, particularly in marginalized and under-resourced communities?	Great question Muhammad. From my point of view the AI Models can do a tremendous job in communicating to different audiences and thereby enable informed citizens even if they previously had no technical education. I also see that these models can be personalized teachers
		Thank you very much
6	Question for Kobra, as a long-term expert in AI, are surprised by the speed of new developments in capability. E.g. GPT3.5 --> GPT4.0. Did you expect to see this capability so quickly?	The technology of LLMs has been there, the hardware requirements was so high that even a country could not invest on that. And yes it is a surprise regarding how good and close to human text you can get
7	how come that references are beeing 'fakely' created some time?	probably hallucinations, something for Kobra to clarify
		I asked GPT4 this question, response below: As an AI language model, I am trained on a diverse range of texts from the internet, including both expert opinions and those from the general public. While the training data includes peer-reviewed sources, news articles, and various other high-quality sources, it also consists of content generated by non-experts or even incorrect information. The model does not inherently assign different weights to different sources of information. However, during training, I learn to identify patterns, correlations, and commonly accepted knowledge. Consequently, I tend to produce answers that are consistent with widely accepted information or expert opinions. Still, it's important to remember that I am not perfect and can sometimes produce answers that are not entirely accurate or that reflect biases present in the training data.
8	Do LLM weight the source of information to formulate an answer? or does an opinion from the general public member weigh the same as that from a peer reviewed source? And how does this influence the output?	The output I generate is influenced by the way questions are phrased and the specific prompts provided. If you want more reliable or expert-sourced information in my response, it can be helpful to specify that in your question. However, as an AI, I am unable to directly provide citations or indicate specific sources for my responses. It is always recommended to verify the information I provide with trusted sources when accuracy is critical.
		How each LLM weights the response is probabilistic (you can get a different response for a new chat) and often confidential the methods used

<p>One thing that I find dangerous from chatGPT is that it shows inaccurate information, but because it is a sophisticated LLM, it seems right. What are the suggestions to use those AIs correctly so that the rubbish can be separated from the right information?</p>	<p>Hi Lucas, you are absolutely right. This false information aka "Hallucinations" are a problem to be taken seriously. A low hanging fruit is to prompt the model right. So, before asking a question, tell the model to be honest "If you don't know the answer say: I don't know". More sophisticated solutions would include e.g. reinforcement learning with human feedback.</p>
<p>What do we call a "parameter" in that context? Is that the same as an artificial neuron?</p>	<p>What do we call a "parameter" in that context? Is that the same as an artificial neuron? yes, each neuron has a weight attached to it, called parameter</p>
<p>Do we have the hardware revolution needed for such a huge training data processing in place now available? ??</p>	<p>Do we have the hardware revolution needed for such a huge training data processing in place now available? ?? yes there are, NVIDIA is providing a number of them, but expensive to have at home!</p>
<p>https://chat.openai.com/ definitely can create code: The quality of the code is at times questionable. So be careful !</p>	<p>My view is crypto mining already created the revolution that ML training needed https://chat.openai.com/ definitely can create code: The quality of the code is at times questionable. So be careful ! live answered</p>
<p>How much control do we have over the fine-tuning process? Can this process be done by the AI itself? Pros and cons?</p>	<p>How much control do we have over the fine-tuning process? Can this process be done by the AI itself? Pros and cons? good point, there are different ways of writing "prompts", and one can use LLMs to write that as well.</p>
<p>ChatGPT can write RASController code</p>	<p>Brilliant!</p>
<p>ChatGPT is censored. Has the model been trained with inappropriate content (how to create a bomb) and therefore it is potentially aware of sensitive information or it has just been trained to detect what is inappropriate in order to avoid an answer that it has not been trained for?</p>	<p>these models have no understanding over good/bad, it is human that defines these for them. So it is very much related to what human has told them! There is no ground truth in many areas and there comes human interpretations.... Indeed true. Does this mean that the training data was pre-filtered for potentially dangerous data or ChatGPT has been trained with EVERYTHING, but censored after training before public distribution, in your opinion? Thx for your time, much appreciate it!</p>
<p>How can we effectively balance the use of AI with human judgment and expertise in water management, and what strategies can we employ to ensure that AI is used as a complement rather than a replacement to human decision-making?</p>	<p>very good point, the best way of using AI is to use it where human lack and not a replacement. Thank you very much</p>
<p>There is obvious dangers on relying on AI alone just like automated Tesla cars- same goes with ChatGPT.</p>	<p>Thank you very much</p>
<p>If LLMs have been trained using data on the internet, will there any copyright breach when it uses the data for training? If it only uses one category of data, like news, or IT blogs, it will be highly biases towards these industries.</p>	<p>There's already legal disputes arising around what AIs have already been trained on and if its proprietary (ChatGPT, DALL-E, Midjourney ect). Getty Images is suing Stability AI, creators of popular AI art tool Stable Diffusion, link here https://www.theverge.com/2023/1/17/23558516/ai-art-copyright-stable-diffusion-getty-images-lawsuit I would be careful using LLMs outputs for comercial use without doing due diligence that a copyright breach wont occur Agreed Kyle - using LLMs (or any AI model) we need to ensure due diligence, as well as being aware of Bias. Similar to humans, bias is always present, so any model trained on biased data will also be biased .</p>
<p>ANUGA being a python Based 2D Model, can be creted by Chat: For Example:</p>	<p></p>
<pre>import anuga # Define the domain domain = anuga.create_domain_from_regions([(0, 0), (0, 1000), (1000, 1000), (1000, 500)], boundary_tags={'left': [0], 'top': [1], 'right': [2], 'bottom': [3]}, maximum_triangle_area=100, mesh_filename='catchment.msh') # Set the initial water level domain.set_quantity('stage', expression='0.1*x') # Set the Manning roughness coefficient domain.set_quantity('friction', 0.03) # Define the rainfall rainfall = anuga.Rate_operator(domain, rate=1.0) # Evolve the simulation in time for t in domain.evolve(yieldstep=10.0, finaltime=1000.0): print('Time:', t) # Save the results anuga.utilities.plot_utils.save_depth_and_discharge(domain, basename='catchment')</pre>	<p>In this example, we first create a rectangular domain using create_domain_from_regions(), which takes a list of vertices and a dictionary of boundary tags as arguments. We set the initial water level using set_quantity(), and the Manning roughness coefficient using another call to set_quantity(). Next, we define the rainfall using the Rate_operator() function. Finally, we evolve the simulation in time using a for loop that calls evolve(), which takes a yieldstep and finaltime as arguments. After the simulation is complete, we save the results using save_depth_and_discharge(), which saves the water depth and discharge to disk as netCDF files. Note that in this example, we also specify a maximum triangle area and a mesh filename when creating the domain. This is not strictly necessary, but can help ensure that the mesh is of high quality and consistent across multiple simulations.</p>
<p>There are number of Chat GPT Apps for Iphone. Which is the latest one and genuine for Iphone?</p>	<p>There are number of Chat GPT Apps for Iphone. Which is the latest one and genuine for Iphone? I would be using the webapp for now, I dont think any of them are "legit" and could be scraping your data</p>
<p>Can you train ChatGPT to use software s by feeding information from software's manual ?</p>	<p>You can. There are e.g. examples with Blender. However, the main thing chatgpt will be able to do is produce code to interact with your software programatically. Execution of this generated code would then need to be automatized. Agent models can do this. Other than that ChatGPT will offer plugins to interact with Tools such as Wolfram alpha</p>
<p>Following on from Pete how far away would private/bespoke LLMs be? Could these be built on an organisations private knowledge base to improve productivity for internal employees? Would this be too costly?</p>	<p>This is already in progress - companies like Databricks have created 'Dolly', and you leverage LLMs yourself using LangChain</p>
<p></p>	<p>Looks like Annemiek answered this well, their's AI LLM "companions" as well that could be retrofit for this purpose</p>

<p>The reason prompt engineer is sought after now is, if you give ChatGPT the right prompts, say the specs/parameters/web docs of the software you use/project you are working on, you build the knowledge of the model regarding that specific topic. Then when you ask it to do something specific/clarify something in that area, it does it to near perfect accuracy.</p> <p>Obviously, you need to check it and make sure it is right, but 99% of the time, with the correct prompts, its answered your query correctly/provided you the right solution :)</p>	
<p>24 As far as I know, ChatGPT3 was trained on a snapshot of the internet for year 2021. Now there are two questions: 1. Could we ask questions about webpages today? 2. How much 25 we can trust the answers without fact checking?</p>	<p>True, it is trained on data before 2021! Regarding trust, if you are asking facts, it might be challenging, as it "generates" text based on the info it has been exposed to including those facts.</p>
<p>26 Can we have chatGPT read through PDF reports ??</p>	<p>Sort of. For now you would have to use a programmatic approach, accessing their API and transform the pdf to raw text in a programming language of your choice. Afterwards get embeddings (vector representation of text data). However, i presume it should soon become easier via chatgpt plugins.</p>
<p>ChatGPT has a problem with referencing. https://www.theguardian.com/commentisfree/2023/apr/06/ai-chatgpt-guardian-technology-risks-fake-article</p>	<p>True! It is generating, not referring to facts, yet...</p>
<p>28 Hi Chris, were you using ChatGPT or GPT-4 in all these prompts?</p>	<p>ChatGPT.</p>
<p>29 Wouldn't ChatGPT's training, which ended some time ago, limit its ability to "review the RAS Solution website?" in other words, aren't we dealing with what it already has learned (a couple of years ago) and cannot ask it to learn new stuff or do something new?</p>	<p>I think you're correct John. Thanks, Chris. Very insightful questions and, as always, a great and useful presentation.</p>
<p>31 1. My question is there any way that we can ask chatGPT to check the internet for the available model or available dataset related to model our desired study area. 2. Can we train chatGPT used H&H model to provide us the preliminary results 3. Can we combine H&H model like HEC-RAS with ChatGPT. Maybe the chatGPT can use previous results to make the process of calibration and validation easier.</p>	<p>On 1. there will be plugins available soon enabling ChatGPT to browse the web. You could also use a programmatic approach using the API and crawl some websites. 2. GPT, as I pointed out in my brief appearance, can struggle with the size of data we typically handle.</p>
<p>32 Once we train an LLM for the 1st time, would they keep training themselves on that subject if we want them to ??</p>	<p>You will need to keep prompting them new material to train (supervised vs unsupervised learning)</p>
<p>34 Is it worth paying for the ChatGPT premium or is the free version good enough? I refuse to pay to test this myself, at least for now.</p>	<p>Absolutely worth it. Much faster--saves a ton of what would otherwise be a ton of wasted (waiting) time. I pay for the premium version but I use it very often for data analytics and software dev, it's worth it for me</p>
	<p>I think it is hard to find a general answer to this. This depends on your use cases and frequency of use. It sure will become very interesting as soon as you can use Tools (like Wolfram Alpha) in the paid version. Otherwise you could also pay on an on-demand basis for the OpenAI API access. This should usually be cheaper and they also offer access to a frontend (website) where you can play with different models and parameters similar to ChatGPT.</p>
<p>35 As a water modeler, we do repetitive tasks especially when it comes to GIS workflow. I know we could create our own workflow in QGIS, but could AI be able to do that?</p>	<p>Engineers are already creating plugins that can do this, they will become more popularised in the coming years</p>
<p>38 should engineers have to declare if ChatGPT or other AI Tools have been used in model builds or assessments? Are there regulatory risks or gaps around this?</p>	<p>I think yes.</p>
<p>38 should engineers have to declare if ChatGPT or other AI Tools have been used in model builds or assessments? Are there regulatory risks or gaps around this?</p>	<p>Good luck making engineers do anything Jonathan! I think we shouldn't make them declare anything but if they choose to use these tools they should carry the risk</p>
<p>39 Damn! It's getting interesting.</p>	
<p>40 Question to Hans: Is the QChatGPT plugin written in python? Does it work in Mac?</p>	<p>Mac installation /Applications/QGIS.app/Contents/MacOS/bin/python3 -m pip install openai</p>
<p>42 What functionalities of QChatGPT are more advantageous than simply using the ChatGPT website?</p>	<p>The main advantage is that you have a panel in QGIS. Hopefully, in the future it can do much more with (spatial) context provided in QGIS. For now there's not much difference with using the chatbot from a browser.</p>
<p>43 I can't install the AI on QGIS: ModuleNotFoundError: No module named 'openai'</p>	<p>It needs to install dependencies. On Windows this is normally done automatically. You can see if you can install the missing openai python package manually.</p>
<p>44 Can't rely on chatgpt because it crashes (reply can't be generated) a lot and abstain a user from accessing it, mostly.</p>	<p>The paid version has far less crashes and hangups.</p>
<p>45 How can we ensure that the data used to train large language models is diverse, representative, and not reinforcing existing biases or inequities in society?</p>	<p>That is not an easy task, an open research question. Even high interest from Elon Musk to introduce "TruthGPT", but generally is there any "truth"?</p>
<p>45 How can we ensure that the data used to train large language models is diverse, representative, and not reinforcing existing biases or inequities in society?</p>	<p>Regarding Elon Musk's proposal for a "TruthGPT," you could note that while the idea of a language model that prioritizes factual accuracy and truthfulness is certainly interesting, it also raises questions about who determines what is "true" and what biases or assumptions may be baked into such a model. It is important to recognize that there may not be a single "truth" that is universally accepted, and that language models must be developed and trained with a deep awareness of the societal and cultural contexts in which they are deployed. Additionally, it is important to involve diverse stakeholders and communities in the development and training process to ensure that a variety of perspectives and voices are represented in the resulting models.</p>
<p>47 The ANUGA HYDRO Model, being Python Code, can be assisted to create Models & Support tools quite easily with AI</p>	<p>The ANUGA HYDRO Model, being Python Code, can be assisted to create Models & Support tools quite easily with AI</p>
<p>48 Is using AI an issue when it doesn't or can't reference where it got its result from?</p>	<p>*****</p>
<p>49 Could you please share the recording?</p>	<p>The webinar is recorded and will be available on our website and YouTube Channel within 2 business days. Don't forget to subscribe to YouTube https://www.youtube.com/channel/UC0wLV7P2YPK6jz5x5lmmCrg?sub_confirmation=1 Thanks AWS *****</p>
<p>50 If I ask the same question to ChatGPT and QChatGPT, am I likely to get the same response?</p>	<p>If I ask the same question to ChatGPT and QChatGPT, am I likely to get the same response?</p>

50	If I ask the same question to ChatGPT and QChatGPT, am I likely to get the same response?	yes it happens several times for me.
51	Engineers are generally under-trained in mathematics and statistics, does Engineering training need to be updated to better equip engineers with these skills to appropriately analyze and critique data generated from AI tools? (Hopefully not too quickly so mathematicians like me can still keep our jobs :p)	100% agree with this, water engineers should have a greater understanding of data analytics / stats otherwise we wont fully understand the processes and limitations behind what we do
52	We use AI models for water treatment and wastewater treatment plant models and optimization at KDX.ai	At Jacobs we use AI in our AquaDNA product. The key thing is you need input data for it to work - so need sensors (IoT)
52	We use AI models for water treatment and wastewater treatment plant models and optimization at KDX.ai	Agree - data availability and quality is always key. The first rule of modelling still applies: garbage in means garbage out.
54	Would love to hear from someone using in wastewater modelling preferably in InfoWorks ICM	Would love to hear from someone using in wastewater modelling preferably in InfoWorks ICM
54	Would love to hear from someone using in wastewater modelling preferably in InfoWorks ICM	We use AI for wastewater treatment, but I know that a company called Kando have used AI for wastewater network water quality modelling.
56	Thank you Kobra, Nice presentation.	by 'we' I mean the company I work for, KDX.ai. Feel free to reach out if you are interested in chatting about AI for wastewater networks.
56	Thank you Kobra, Nice presentation.	Thank you Kobra, Nice presentation.
58	I wonder if Chat GPT will be able to read data as attached files such as excel files, gis layers... and do the required analysis? Thankyou	i presume this will soon be taken care of via plugins (which are not yet available to a broad audience). You can also use the api and preprocess e.g. excel with a programming language of your choice and convert it to raw text to feed it to chatgpt (either via embeddings or copy paste). But then again, as chatgpt is great with messy data, why not try copy pasting the excel data directly (it doesn't have to look pretty for us humans in the pasted version, chatgpt will handle this). Just remember to check afterwards for correctness :)
59	as AI progress, do you see humans/engineers as a final step of stamping/certifying/approving, and take associated responsibility?	In many jurisdictions, you'd immediately lose your engineer (or other) designation for not being fully involved in the work and not properly reviewing it. Would you take legal and ethical responsibility for peoples lives from a software known for hallucinations?
		yes and no, Yes, when the results are certified and approved by engineers (who will take all responsibilities, regardless of where the results come from). No, when results are not reviewed by humans
60	Hello from Canada! Will this recording be shared so those who have to leave early can pickup where they left off? Also, the questions here are very good. Will the questions and answers also be shared?	***** The webinar is recorded and will be available on our website and YouTube Channel within 2 business days. The Q&A file will also be shared on our website. Don't forget to subscribe. Subscribe to YouTube https://www.youtube.com/channel/UC0wLV7P2YPK6jz5x5lmmCrg?sub_confirmation=1 Thanks AWS *****
69	Thank you :)	
70	thank, have a good day	
	Can I develop a model, then have a language learning model write a model development summary report?	Yes this is very easy to do with tools like ChatGPT, you will just need to prompt it correctly, I provided an example (attachment 1). The more details you provide the better the report, just be careful with providing confidential information
	What are the protocols and best practices for referencing and crediting Chat GPT or other LLMs? D	Depending on the LLM, some are not for commercial use or will require specific referencing or are non-proprietary, you will need to research the specific LLMs terms and conditions you are interested in using. I would exercise caution when using outputs for reports and research without tracking down the proper credits, as LLMs are trained on databases of existing work the potential for plagiarism is high. There are emerging papers that specifically discuss the use of LLMs for writing research papers, example: https://www.sciencedaily.com/releases/2023/03/230323103316.htm
	Can an AI assistant learn from me as I build my hydraulic models and over time, with sufficient learning, build them for me?	AI models are very poor with extrapolating (in LLM this creates "hallucinations") and from my experience no hydraulic model is the same (each comes with a surprise / twist that requires engineers judgement). It can be used to "automate the boring tasks" like META's new released "Segment Anything" for roughness mapping and GIS. I suspect clever hydraulic engineers will keep building more and more AI tools to automate these types of tasks. So the complex, site specific problem solving will be left up to the human. A core part of my business (Forward Hydro) is around this, with some tools to be released late this year or next.
	Can I have an AI assistant download all of my material on The RAS Solution, and take over as my technical support bot?	I suspect ChatGPT may have already done this, I provided an example (attachment 3). The AI provided a funny response towards the end 😊
	Can I have an AI learn how to troubleshoot a model?	See response to (3), hydraulic models (ie TUFLOW and FLOW3D) are already very user friendly and provided broad enough error codes that most issues are pre-emptively troubleshoot. Engineers judgement will most likely still be necessary due to site specific problems and AI extrapolating issues.
	Will AI's talk and share with other AI's? How do we protect proprietary and sensitive material?	There's already legal disputes arising around what AIs have already been trained on and if its proprietary (ChatGPT, DALL-E, Midjourney ect). Getty Images is suing Stability AI, creators of popular AI art tool Stable Diffusion, link here https://www.theverge.com/2023/1/17/23558516/ai-art-copyright-stable-diffusion-getty-images-lawsuit
		Plugins are already being developed to allow AI tools to communicate with each other, there are many already in place for ChatGPT that will change things beyond what we can comprehend (ie Wolfram Alpha has a ChatGPT plugin https://www.wolfram.com/wolfram-plugin-chatgpt/)
	Can I have an AI assistant watch me as I build my model, and suggest corrections to me as I'm going? I.e., the AI has access to all the tutorials, guidance documents, user's manuals, etc., and is watching to make sure I don't miss something, or stray outside the guidelines. I'm picturing the scene(s) in Iron Man where Robert Downey Jr. is building something in his shop and he and his virtual assistant Jarvis are constantly talking through how to do it.	There's plugins for ChatGPT that turns it into the modern version of "Clippy", these are still in their infancy. Hydraulic engineering is very niche compared to other fields, It would take a very dedicated water engineer to develop a customised AI assistant for model building and train it on a database of hydraulic specific stuff sufficiently to the point it can follow along and provide advice. I suspect ChatGPT is already trained on alot of this stuff but responses it would provide would be too broad.
	Will software begin to have AI Plugins as a standard?	It's already being implemented into windows based software, AI plugins will probably make an appearance for niche tasks to "automate the boring stuff", see my earlier response. Some software like tuflow and flow3d have dedicated python libraries and api's, making developing custom AI by their users possible

<p>What about reservoir and canal operations? Can an AI assist operators with gate openings/closings in advance of floods? Imagine an AI running thousands of scenarios in a few seconds and then suggesting the one with the best outcome.</p>	<p>My machine learning hydrology paper attempted something very similar to this except for calibrating hydrological models, a similar approach to what I took would be a good starting point. I think a neural network / AI to do this could be developed and trained relatively easy to aid in operators, the issue being AI models struggle with time series data and extrapolating results which would be problematic when a rare event (ie brisbane 2011 floods) occurs with little to no historic data and the AI starts extrapolating operations. An alternative approach where 100's of thousands of scenarios are stored in a database and ensembles of the most similar inputs are selected through a lookup to aid operators in exercising their own engineering judgement may be a more appropriate approach.</p>
	<p>I can also see plenty of potential litigious issues if an AI is used to inform on operations in advance of a flood. IE if my house has flooded due to a decision made by a "black box" who is liable?</p>
	<p>machine learning paper available here</p>
	<p>https://www.surfacewater.biz/wp-content/uploads/2021/12/HWRS2021_Paper_31_Kyle_Thomson_.pdf</p>
<p>What are we not even thinking about with regard to AI and water modeling?</p>	<p>Calibrating models and better statistical methods for estimating model parameters. There's very smart engineers (ie Dr Monte Azmi) with papers on statistical approaches similar to those used in training and testing (when developing a machine learning algorithm) that would provide valuable insight if applied to water modelling.</p>
<p>What are the concerns? Will it come to a point where we are AI managers, and no longer hydraulic modelers?</p>	<p>My theory is there will be consultants who use AI to deliver work like AI managers, but they wont understand the finer (important) details and outcomes of the hydraulic assessments. We will read about them in court cases one day (see my earlier responses on engineering judgement and AI extrapolation)</p>
<p>Will AI, Chat GPT, LLM, etc. make us dumber over time, or just more efficient (or both)? Example: Google Maps has made me very bad at finding my way around (without Google Maps), Autocorrect has made me a bad speller, etc.</p>	<p>I think AI tools will speed up the rate of completing projects and delivering work. Go back 10 years and it would take a team of engineers / hydrologists to deliver a flood study, and take them maybe 6 to 12 months. Now they can be delivered to a greater level of detail in < 1 month by a single engineer (depending on the study). With AI fewer engineers will exist in the industry and they will be delivering alot more work than now, I think the bar to entry will be alot higher. Most grads I see struggle to pick up tools like TUFLOW without significant oversight, good luck when they're expected to understand fluid dynamics and operate a range of automation / AI tools, and stay on top of publications and standards. This wont be good for most engineers as the knowledge bar to entry for senior / certifying technical roles will be too high.</p>
	<p>For day to day life AI will definitely cause a trend towards idiocracy, why exercise the problem solving or critical thinking part of your brain when the machine trained on the sum of all human knowledge will just tell you. My concern is who trains the machines.</p>
	<p>My hydrology ML paper is here: https://search.informit.org/doi/epdf/10.3316/informit.342934168443489</p>
	<p>and flash back to surfacewater.biz, there's a free copy here:</p>
	<p>https://www.surfacewater.biz/wp-content/uploads/2021/12/HWRS2021_Paper_31_Kyle_Thomson_.pdf</p>
	<p>You also have Jordan Maultby's papers on AI for GIS Roughness:</p>
	<p>https://www.surfacewater.biz/wp-content/uploads/2021/11/20210427_FMA21_ArtofRoughness_FINALPaper.pdf</p>
<p></p>	<p>which very interestingly, recently META has released "Segment Anything" which would be a major improvement on Jordans early investigation, more info here:</p>
	<p>https://segment-anything.com/</p>
	<p>and you might have seen videos like this on linkedin:</p>
	<p>https://www.linkedin.com/posts/robcsloan_geospatial-segmentation-earthobservation-ugcPost-7055212666050482176-Xm81?utm_source=share&utm_medium=member_desktop</p>
<p>69 Thank you :)</p>	
<p>70 thank, have a good day</p>	