AI Meets Data

A Powerful Partnership for Insights

Data to Diamonds

Transforming Information into Value

PRESENTED BY MEMORY SPRING AND CPS HR CONSULTING

MEMORY SPRING

ROBERT "BUD" JAMES, PH.D.

MICHAEL LAWRENCE GREEN

140 B STREET
SUITE 5-354
DAVIS, CA 95616
(530) 297-6464
Michael@MemorySpring.com

CPS HR

HR Consulting For State & Local Government | CPS HR

TrainingCenter@CPSHR.US

(916) 263-3600 (Option 3)

Table of Contents

Program Overview
AI Meets Data: A Powerful Partnership for Insights

In this interactive 1-hour webinar, you'll gain a taste of the Data to Diamonds program offered by Memory Spring, exploring the fundamentals of how GenAI can assist HR Data Analysts. Through a hands-on activity, you'll get to experiment with one or more of the top large language models and unlock the potential of this exciting collaboration between AI and data.

Whether you're a complete beginner with GenAI or looking to widen your skills, this session is a perfect starting point to unleash the power of HR Data Analysis!

Confidentiality Statement

The material in this document, the class presentation material including PowerPoints, PDFs, and Word Docs, as well as class discussion contains information that is proprietary to Memory Spring. We recognize that the information we receive from clients during our engagement is confidential and we request that our material also be handled in a confidential manner.

Dynamic Material

As this Course is being dynamically co-created and presented by Memory Spring and CPS HR Consulting Leadership Teams, some content may be updated throughout the program.

Artwork

All images in this document and presented in class are either original contributions of the authors, are public domain, or are attributed to a specific source.

All Rights Reserved

Data to Diamonds: Transforming Information into Value

A 5-Class Data Analytics Certificate Program for Analysts

Do you want to learn how to harness the power of data to make better decisions, improve performance, and drive innovation in your organization? Do you want to gain practical skills and knowledge in data analytics that you can apply immediately in your work? If so, then this Data Analytics Certificate program is for you!

This program is designed for professionals who use data analysis as part of their job, such as managers, analysts, consultants, marketers, educators, and researchers. It consists of five one-day courses that cover the essential topics and tools in data analytics, from data collection and processing to data visualization and communication.

By completing this program, you will:

- **Develop Proficiency in Microsoft 365 Tools for Analysis**
    - ✓ Learn to gather, analyze, and present data effectively
    - ✓ Leverage Microsoft 365 tools like Excel, PowerPoint, and Forms to gather, analyze, and present data effectively.

- **Gain Expertise in Generative AI**
    - ✓ Develop an understanding of the popular Generative AI tools like Open AI's ChatGPT and DALL-E, Bing Copilot, and Google Gemini.
    - ✓ Learn how to use them to enhance data analysis workflow and presentations.

- **Develop a Strong Ethical Foundation**
    - ✓ Learn to navigate the various ethical challenges in data analytics, ensuring responsible and conscientious data use.

- **Present Data Convincingly to Propose Solutions**
    - ✓ Build Microsoft PowerPoint presentations that inform Decision Makers and help solve problems
    - ✓ Learn how to create persuasive presentations emphasizing storytelling, data graphics, and effective communication techniques.

- **Receive a Certification in Data Analytics**
    - ✓ Enhance your Productivity and Advance your Career
    - ✓ After successful graduation from all 5 classes, you will gain a Data Analytics Certification from Memory Spring and CPS HR.

Data to Diamonds Course Content

Data to Diamonds is a practical learning experience designed specifically for professionals who integrate data analysis into their daily roles. This comprehensive program consists of five intensive 1-day courses, carefully curated to enhance your expertise and effectiveness in leveraging data for informed decision-making. We suggest taking the classes in order, as we build on the skill set and knowledge gained from each class. Completion of all five classes is required for certification.

1. Intro to Data Analytics: (7-hour class)

Dive into the data-driven world we live in today and understand how data and information gathering have evolved. Learn about the foundational toolsets, key terminology, and core concepts of data analytics. Get hands-on experience with Microsoft Forms for creating surveys and polls to gather data. Discover how Generative AI can support data analytics and explore the ethical considerations involved. The class concludes with a roadmap for your certification journey, outlining the next steps towards mastery.

Course Topics

- Data Overload – Welcome to our modern world!
- How Data Gathering and Utilization has changed
- Core Data Analytics Concepts and Terminology
- Hands-On: Use Microsoft Forms to gather data
- How can AI support Data Analytics?
- Ethics and Data Analytics
- Certification Program Overview and Requirements
- Next Steps

2. Turning Data into Useful Information: (7-hour class)

Develop a clear understanding of the problem to be addressed by the data. Learn how to identify the core data needed for the desired outcome and where to find it. Overcome data hygiene and interpretation challenges and learn how to distill data into relevant information points. Understand and use the mantra "less is more" for all aspects of the Data Analytics presentation process. Gain practical experience using Excel to create charts and graphs, and PowerPoint for presenting your data.

Course Topics

- Is it Data or Information?
- Data Interpretation Challenges
- Defining Your Audience, Goals, and Objectives,
- Core Information Analysis Tools
- Hands-On: Use Excel to make Charts and Graphs
- Distilling Data to Relevant Information Points
- Less is More
- Hands-On: Use PowerPoint to Present Your Data

3. Leveraging AI in the Data Process: (7-hour class)

Understand the challenges and opportunities of Generative AI (Large Language Models) and how to speak with them. Compare and use OpenAI's ChatGPT and DALL-E, Bing Copilot, and Google Gemini. Learn how these tools can improve data gathering efficiency and effectiveness, enhance data analysis, and improve your presentations. Explore ethical considerations and address security concerns in the realm of AI and data analytics.

Course Topics

- ♦ AI: Terms, Challenges, and Opportunities
- ♦ Prompt, Prompt, Prompt! It's all in the Question?!
- ♦ Hands-On: Compare and use Open AI's ChatGPT & Dall-E, Bing Co-Pilot, and Google Gemini
- ♦ How to Use AI to:
  - o Improve Data Gathering Efficiency and Effectiveness
  - o Enhance the Data Analysis Process
  - o Enhance Your Data Presentations
- ♦ Ethics and AI

4. Presenting Data Effectively: (7-hour class)

Master the art of presenting data to diverse audiences. Define goals, assess the current situation, and develop impactful recommendations and key points. Consider what challenges you may experience when you deliver your presentation. Dive into data graphics, including infographics using tools like Infogram.com. Understand generational approaches and ensure ADA/508 compliance. Explore dashboarding, storytelling, and hone your presentation skills to effectively convey insights.

Course Topics

- ♦ Know Your Audience's Needs and Wants
  - o Considerations for Generational Approaches and 508 Compliance
- ♦ What are Your Goals?
- ♦ Learn to describe the Current Situation
- ♦ What are your Recommendations / Key Points
- ♦ Are there Potential Concerns or Challenges?
- ♦ Hands-On: Data Graphics using Excel
- ♦ Hands-On: Improve Your Presentation Skills with Microsoft PowerPoint
- ♦ Hands-On: Creating Infographics with Infogram.com
- ♦ Dashboarding
- ♦ Storytelling

5. Using Information to Drive Action and Accountability: (7-hour class)

Understand how to use project management data and turn it into useful information that drives action. Define project goals using KPIs, interpret real-time data, identify trends, and manage outcome states with appropriate information. Understand Scope creep and how it is impacted by subjective versus objective metrics. Craft a simple Dashboard using Excel. Learn how a useful feedback loop can help you manage accountability.

Course Topics

- Project Management Data Utilization
- Defining Project Goals using KPIs
  - Subjective or Objective Goals
- Dashboards: Realtime vs Incremental Reporting
- Hands-On: Creating a Simple Dashboard
- Monitoring and Interpreting Realtime Data
- Identifying Trends
- Managing Accountability and Driving Outcome States through with Appropriate, Actionable Information
  - Creating a Useful Feedback Loop
- **Class Review and Certification!**

Analyst turning Data into Diamonds (Copilot)

Unveiling the Mystery of AI

Before diving into data processing and analysis, let's establish a foundational understanding of AI. Imagine a machine that can mimic human cognitive functions like learning and problem-solving - that's the essence of AI! These machines are trained on vast amounts of data to perform specific tasks, like image recognition, natural language processing, and data analysis.

Mimicking Human Intelligence: AI isn't about replicating human consciousness, but rather mimicking **<u>some aspects</u>** of human cognitive abilities. This includes pattern recognition, decision-making, and even creativity in some applications. They can perform specialized functions like image recognition, Natural Language Processing, and perform many aspects of data analysis.

Learning from Data: Unlike traditional computer programs with pre-defined instructions, AI systems learn and improve over time by analyzing massive datasets. This allows them to adapt to new situations and continuously enhance their performance.

The Traditional Approach to Data Processing - Friend or Foe?

Before AI burst onto the scene, many aspects of data processing relied on traditional methods. While these methods laid the groundwork for modern AI-powered approaches, they also presented certain challenges. Let's take a trip down memory lane to explore the world of traditional data processing:

- **Manual & Laborious:** Data processing often involved tedious manual tasks like data entry, cleaning, sorting, and analysis. Imagine large spreadsheets filled with raw data, all requiring human intervention to organize and prepare them for further use.

- **Time-Consuming & Error-Prone:** The manual nature of traditional data processing made it a slow and labor-intensive endeavor. Additionally, human error was inevitable, potentially leading to inconsistencies and inaccuracies in the processed data.

- **Limited Scalability:** As data volume started to explode, traditional methods struggled to keep pace. The sheer amount of data often rendered manual processing impractical, hindering the ability to analyze large datasets effectively.

How AI is Transforming Data Processing

The limitations of traditional data processing methods became a catalyst for the rise of Artificial Intelligence that can work tirelessly 24x7x365. AI offers a powerful set of tools that are transforming the way we handle and extract value from data.

Here's a closer look at how AI is revolutionizing data processing:

- **Automating Repetitive Tasks:** AI excels at automating repetitive and time-consuming tasks like data cleaning, normalization, and formatting. Imagine AI algorithms meticulously sifting through massive datasets, cleaning inconsistencies, and organizing information efficiently. This frees up human analysts to focus on higher-level tasks like interpreting results and drawing insights.

- **Pattern Recognition & Anomaly Detection:** The power of AI lies in its ability to identify patterns, trends, and anomalies in data that might escape human analysts. By analyzing vast amounts of data from multiple perspectives, AI can uncover hidden patterns and potential issues, leading to more informed decision-making.

- **Data Visualization & Communication:** AI can generate data visualizations (charts, graphs) that effectively communicate insights and trends within the data. These visualizations help analysts understand complex relationships and patterns within the data, facilitating clearer communication and knowledge sharing.

Challenges of AI in Data Processing

The world of AI in data processing isn't all sunshine and rainbows. While AI offers immense potential, there are challenges to consider before jumping on the AI bandwagon. Let's explore some of the roadblocks you might encounter on your journey with AI-powered data processing:

- **Data Quality - Garbage In, Garbage Out:** The effectiveness of AI models hinges on high-quality data. Inaccurate, incomplete, or biased data can lead to biased or inaccurate results. Imagine feeding an AI system a dataset filled with typos or inconsistencies - the resulting analysis will likely be unreliable. Ensuring data quality is paramount for successful AI implementation.

- **Explainability - The Black Box Dilemma:** Understanding how AI models arrive at their conclusions can be challenging. These models often function as "black boxes," making it difficult to interpret their reasoning and build trust in their results. Without explainability, it's hard to understand if the AI is making sound decisions or simply correlating patterns without true understanding.

- **Ethical Considerations - Avoiding Bias:** AI algorithms can perpetuate societal biases present in the training data. For example, if an AI model used for loan applications is trained on historical data that discriminated against certain demographics, it might continue this bias in its own decision-making. Addressing ethical considerations is crucial to ensure AI is used responsibly and fairly.

These challenges shouldn't deter you from exploring AI in data processing. However, being aware of these roadblocks allows you to approach AI implementation strategically and mitigate potential risks.

Hype vs. Reality: A Balanced View of AI in Data Processing

The world of AI is often portrayed as a magical solution that can solve any data problem. News articles and marketing campaigns can create unrealistic expectations about the capabilities of AI. It also paints AI as an evil that will destroy humanity if not properly managed.

The truth is somewhere in the middle, as always. By understanding the hype and reality of AI, you can leverage its capabilities effectively in your data processing workflows.

The Hype: Unrealistic Expectations

AI is sometimes presented as a silver bullet that can automatically clean, analyze, and interpret data, providing instant insights. This portrayal oversimplifies the complexity of AI and data processing. Successful AI implementation requires careful planning, high-quality data, and human expertise to guide its application.
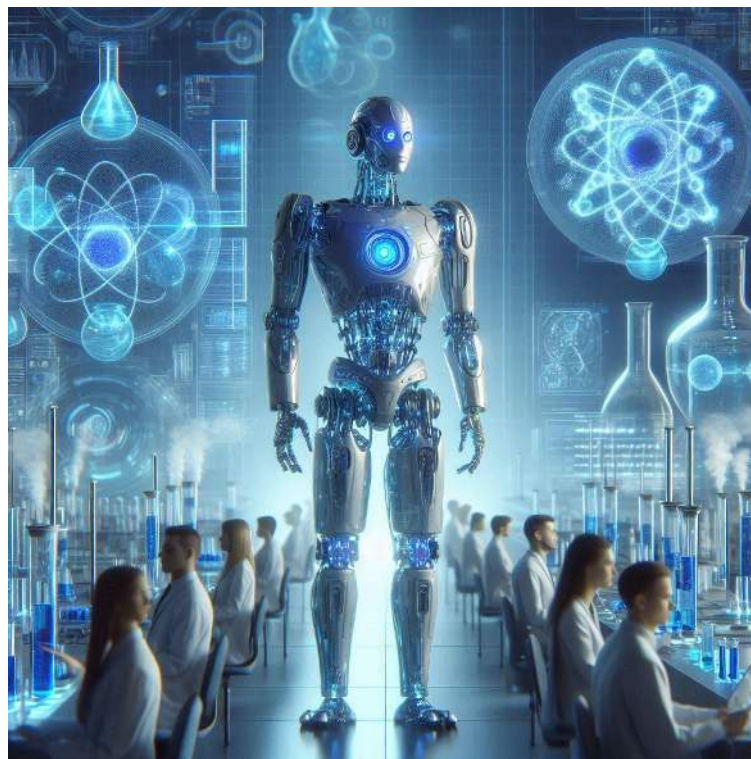
The Reality: A Powerful Tool, not a Replacement

AI excels at specific tasks like data automation and pattern recognition, but it doesn't replace human analysts. Human expertise remains crucial for interpreting results, drawing conclusions, and making strategic decisions based on the data insights provided by AI.

Finding the Right Balance

The key is to approach AI as a powerful tool to **augment** human capabilities in data processing. It is not a replacement and needs human input and guidance to be effective. We will be revisiting this topic throughout the program from many perspectives. As a Data Analyst, here are some points to consider:

➢ **Clearly Define Objectives:** Identify the specific tasks you want AI to automate or enhance in your data processing workflow. This focus ensures you're applying AI to the right problems and measuring its impact effectively.

➢ **Invest in Data Quality**: Remember, "Garbage in, Garbage out." Ensure your data is clean, accurate, and relevant to the task at hand. Investing in data quality improves the reliability and trustworthiness of the insights generated by AI.

➢ **Ground Truth:** Establish a reliable ground truth or benchmark to compare the generated results against. This could involve manual verification, expert opinions, or comparisons with other data sources.

➢ **Maintain Human Oversight:** While AI can automate tasks, human expertise remains essential. Analysts need to interpret the results generated by AI, identify potential biases, and make informed decisions based on the combined data and human understanding.
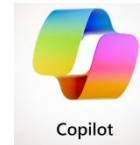

What science fiction has depicted as an Artificial Intelligence (Copilot)

Under the Hood - A Comparative Analysis
A Look at ChatGPT, Copilot, and Gemini for Data Analysis

Data Analysis involves a multi-step process that includes data cleaning, exploration, visualization, and drawing insights. While AI can't replace human expertise in all aspects, it can significantly enhance these processes. Here we'll delve into the capabilities of three prominent AI tools and assess their strengths and weaknesses in the realm of data analysis.

- ➢ **Open AI's ChatGPT**
- ➢ **Microsoft's Copilot**
- ➢ **Google's Gemini**

Comparing the Tools
While all three platforms leverage sophisticated AI and machine learning technologies, their core engines are optimized for different environments and use cases, reflecting the strengths and priorities of their respective parent companies.

1. Integration and Ecosystem:
- ➢ **ChatGPT 4 by OpenAI** is more platform-agnostic, designed to integrate with a wide range of applications through the OpenAI API.
- ➢ **Microsoft Copilot** is highly integrated within the Microsoft ecosystem, utilizing services like Microsoft Graph APIs and Azure AI to offer seamless functionality within Microsoft 365 apps.
- ➢ **Google Gemini** is similarly integrated within Google's ecosystem, leveraging Google Cloud and Workspace tools along with advanced AI from DeepMind and Google Research.

2. Artificial Intelligence (AI) and Machine Language (ML) Frameworks:
- ➢ **ChatGPT 4** is built on OpenAI's cutting-edge transformer models, leveraging proprietary techniques like RLHF.
- ➢ **Copilot** Started with OpenAI's ChatGPT 3.5 and quickly modified it to deeply integrates with Microsoft's proprietary technologies and Azure infrastructure, with adaptations of GPT models.
- ➢ **Gemini** employs Google's proprietary AI technologies and frameworks such as TensorFlow and JAX, optimized for Google's cloud infrastructure.

3. Application Focus:
- ➢ **ChatGPT 4** offers versatility across different domains, capable of performing a wide range of tasks from natural language processing to complex data analysis.
- ➢ **Copilot** is tailored for productivity enhancements within Office applications, focusing on automating and optimizing tasks specific to this environment.
- ➢ **Gemini** aims at advanced data analysis and scalability, with strong integration into Google's data and AI services.

Crafting a Proper AI Prompt

Crafting good prompts is a skill that develops with practice. The great news is that the AI will often reword your request and you can learn from how it re-wrote your query to create a slightly better prompt. You can also ASK the AI for prompt building assistance. Don't be afraid to experiment and learn from your experiences!

1. **Break Down Your Goal**
   a. **Define the Problem:** What information are you trying to get from the AI? Are you generating creative text, translating languages, or analyzing trends?
   b. **Identify the Data:** What data will you feed the AI? Make sure it's relevant, clean, and formatted correctly.

2. **Craft Your Prompt**
   a. **Start Simple:** Begin with clear and concise instructions. As you get comfortable, add details, and refine your prompts.
   b. **Focus on the Desired Outcome:** What kind of output do you expect from the AI?
   c. **Use Examples:** Provide the AI with examples of successful outputs to guide its understanding.

3. **Use Clear and Consistent Language**
   a. **No Abbreviations**: Avoid abbreviations, jargon, and terms the AI might not understand unless you clearly define them.
   b. **Details Count**: When in doubt, spell it out in more detail rather than less.
   c. **Maintain Consistency:** Use the same format and terminology throughout your prompts for better results.

4. **Experiment and Refine**
   a. **Test Different Prompts:** With the same data set, try variations of your prompt to see how the AI responds.
   b. **Try Different Tools:** If you have access to other GenAI tools, try your prompt with them and note how it responds.
   c. **Analyze the Results:** See how well the AI performs. If the outputs aren't what you expected, go back and refine your prompt.
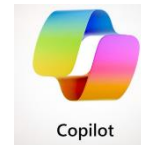
Hands-On: HR Data Analytics with GenAI
Objective: Utilize GenAI to assist your HR Data Analytics

Which GenAI Tool do you have access to? Click on the following links and login. You may need to use a NON-Work-related email to login to the free version of each of these platforms.

➢ Open AI's ChatGPT
   https://chatgpt.com/

➢ Microsoft's Copilot
   https://www.bing.com/chat

➢ Google's Gemini
   https://gemini.google.com/

In this Breakout we will be copying a series of inquiries into the GenAI of your choice.
If you have access to multiple versions, feel free to explore the different responses.
Copy and paste the query into your GenAI and read the results.
We will discuss your answers soon.

Query # 1

Hello <GenAI>, please provide 5 sample prompts that a Government HR Data Analyst might use when querying a GenAI, include the data needed to answer the query, and explain why they are good prompts.

Query # 2

Thanks! What are some innovative ways that HR professionals can recruit and retain employees in the government sector?

Query # 3

Great! Please analyze key employment trends in today's government workplace over the past 3-5 years.
Focus on trends related to:
* Recruitment and retention: Are there any challenges in attracting and retaining qualified employees? If so, what demographic groups are most affected?
* Skills and Experience: Are there any specific skills or experiences that are becoming increasingly in demand within government jobs?
Work arrangements: Are there any shifts in work arrangements, such as remote work options or flexible schedules, within the government sector?
* Diversity and Inclusion: Are there any notable trends related to diversity and inclusion efforts in government hiring practices?

Query # 4

Continuing, please provide supportive data and sources for your response.

Was that educational? **And perhaps fun?** What was your experience using these prompts with your GenAI? Click this link and let us know: https://forms.office.com/r/jiytybZt9g

Analyzing Your Results

Read the answers carefully and be a little skeptical.
Put on your Data Detective hat and review the following:

1. **Alignment with the Prompt:** Did the AI's response address <u>all</u> aspects of the prompt? Did it skip anything? Does the output fully answer the question or complete the task as instructed?

2. **Data Validity and Source:** Did the AI use the data you provided, or did it incorporate external data sources?
   If it used external data, was the source credible and relevant to the analysis?
   <u>Did you verify it?</u>

3. **Reasonableness and Explainability:** Are the AI's findings reasonable in the context of the data and the real world?
   Can the AI explain its reasoning and how it arrived at its conclusions? This is especially important for complex analyses.

4. **Accuracy and Bias:** How accurate are the AI's results?
   Are there any potential biases in the data or the AI model that could skew the outcome? Data analysts should be aware of potential biases in AI and employ techniques to mitigate them.

5. **Actionable Insights:** Does the AI's response provide actionable insights that can inform policy decisions or government actions?
   Can the results be easily communicated to stakeholders who may not be familiar with AI?

Data Detective analyzing an error condition (Copilot)

Using AI to Help Fine-Tune
Your Presentation

(Excerpt From Class 4 of Data to Diamonds – Presenting Data Effectively)

Generative Artificial Intelligence (GenAI) can elevate your presentations and handouts to a whole new level of professionalism and impact. It can be your ally in crafting impactful and professional government presentations and handouts.

Harness its power to brainstorm, build narratives, design visuals, and refine your message. Utilize this technology to make your data shine – and ensure your presentations become the highlight of any meeting. Let GenAI empower you to transform data into diamonds for impactful communication within the government sector.

The following examples provide a starting point for GenAI to generate creative content. Remember to tailor the data input and refine the queries based on your specific presentation needs and the capabilities of your chosen GenAI tool. Make sure you define your Query and your Data Input clearly so GenAI can understand your request. Recraft your query and data input multiple times to get the best results.

1. Enhanced Brainstorming

Facing a blank page? GenAI can become your brainstorming partner. Provide your data set and explore creative avenues. GenAI can suggest unexpected angles, generate potential presentation titles, or even recommend novel storytelling approaches. This collaborative process helps you identify the most impactful ways to communicate your findings to your audience.

Examples:

Scenario: You are presenting trends in renewable energy adoption across the US and want GenAI to assist you in crafting different approaches to present the data.

GenAI Example Query 1. Unexpected Angle

GenAI Query:
> Please use the following data to answer this question: What are some unexpected consequences, positive or negative, that this policy might have on factors beyond traffic congestion, such as air quality, business activity, or public transportation usage?

Data Input from Analyst:
> *Provide a brief description of the policy and any relevant data on traffic congestion before and after implementation.*

Suggested Unexpected Angles:
> Focus on the economic impact of renewable energy on various rural communities. Here are some suggestions…

How to Sign-Up

Take charge of your data skills and unlock your potential.
Enroll in our Data to Diamonds Certificate program today!
If you have any questions or need more information, please email us at
TrainingCenter@CPSHR.US or call **916-263-3600 (Option 3)**.

Data to Diamonds Roadmap

Transforming Information to Value

A 5-Class Data Analytics Certificate Program

Thurs Oct 10/24 - Intro to Data Analytics

Thus Nov 14/24 - Turning Data into Useful Information

Tues Dec 03/24 - Leveraging AI in the Data Process

Thurs Jan 09/25 - Presenting Data Effectively

**Thurs Feb 13/25 - Using Information to Drive
Action and Accountability**

©2024 Memory Spring

Next Steps

🔷 **Sign up for the Classes:**

✓ **email TrainingCenter@cpshr.us**

✓ **Or call 916-263-3600 (Option 3)**

🔷 **Certification received after
successful completion of
all Five classes**

Your Instructors

Michael Green	Memory Spring Founder, President, Instructor
Co-Founder of Delta-4	Has trained over 50,000 people
Memory Health Expert, Sales, Presentation Coach, and Instructor	Bachelor of Science Business Administration, Finance
Adjunct Professor, University of California, Long Beach	Regional VP of ARCS Mortgage
Licensed California Real Estate Broker	Professional Toastmaster Martial Artist
Michael@MemorySpring.com (520) 297-6464	Michael Green	LinkedIn

Robert "Bud" James, PhD	Memory Spring Sr. VP of Curriculum, Instructor
Bachelor's Degree and Multiple Certs in Information Technology (BSIT)	30+ year career in Information Technology including Oracle, BEA, Unisys, MySpace.com, and more.
Masters and PhD in Spiritual Counseling	Ordained Interfaith Minister and Seminary Instructor All Faiths Seminary International
Adjunct Professor, University of California, Long Beach	Master Scuba Instructor (PADI #6554) 4,000+ dives Emergency First Responder Instructor - PADI
Emergency Medical Technician (EMT-1)	Red Cross Water Safety Instructor, First Responder & CPR Instructor
USAF Combat Controller (Spec Ops), Air Traffic Controller	Military Trained Scuba Diver, Master Parachutist, Skier, Global Survival, Instructor
Bud@MemorySpring.com (520) 297-6464	Robert "Bud" James	LinkedIn

Our Memory Spring Programs

Advanced Memory Techniques
DataStory: Mastering the Art of Data Presentation
Delivering Memorable Presentations
Dynamic Team Planning
Enhancing Workplace Resiliency
Managing Workplace Stress
Mastering Online Collaboration using Microsoft Teams
Maximizing Your Memory
Mindfulness in the Workplace
Online Collaboration for Project Managers
Online Collaboration for Salespeople

For more information, click on a link above, or contact us at:

MEMORY SPRING

140 B STREET, SUITE 5-354

DAVIS, CA 95616

(530) 297-6464

michael@memoryspring.com
bud@MemorySpring.com

http://memoryspring.com