Prompt\_Revisions\_TylerWobschall

**Company Selection**

For this lab, I selected **Virginia Commonwealth University (VCU)** as my target company. It is a higher education and research institution based in **Richmond, VA**. I found a job posting for a **Data Analyst** role at VCU supporting oncology clinical trials, which aligns with my field of study in **data analytics**. The position focuses on data quality review and evaluation, making it a strong fit for exploring how data analytics applies in real-world settings.

**LLM Selection**

For this lab, I chose **ChatGPT (GPT-4)** and **DeepSeek-V2** as my large language models.

**ChatGPT** was selected due to its high accuracy, professional tone, and reliable performance. It is well-known for generating detailed and structured responses, making it a strong candidate for SWOT analysis tasks.

**DeepSeek-V2** was chosen as a contrasting model. It has a strong technical foundation and is recognized for its ability to handle analytical and structured prompts. Using it provides a good opportunity to compare output quality and reasoning between two different architectures.

**SWOT Initial Prompt #1 – ChatGPT**

**Prompt:**

Generate a SWOT analysis for Virginia Commonwealth University, a higher education institution based in Richmond, VA.

## Strengths

* R1 Research Classification: VCU is designated as an R1 university, indicating very high research activity. In fiscal year 2024, it secured over $500 million in sponsored research, placing it among the top 50 research universities nationally.
* Top-Ranked Arts Programs: VCUarts is consistently ranked among the top public art and design schools in the U.S., with specific programs like Sculpture and Graphic Design receiving high national rankings.
* Urban Campus with Industry Access: Situated in downtown Richmond, VCU offers students proximity to a growing arts, healthcare, and business community, enhancing opportunities for internships and professional development.
* Diverse Academic Offerings: With over 200 degree and certificate programs across 11 schools and three colleges, VCU provides a broad spectrum of academic disciplines, catering to a wide range of student interests.
* Strong Health Sciences Division: The VCU Medical Center and associated health programs are nationally recognized, contributing significantly to the university's research output and community health services.

## Weaknesses

* Adjunct Faculty Reliance: VCU has faced criticism over its dependence on adjunct faculty, particularly concerning compensation and job security, which may affect faculty morale and student learning experiences.
* Infrastructure Challenges: Some campus facilities are outdated, with reports of limited availability of modern classrooms and technology resources, potentially impacting the quality of education and student satisfaction.
* Class Availability and Scheduling: Students have reported difficulties in enrolling in required courses due to limited class offerings and scheduling conflicts, which can delay graduation timelines.

## Opportunities

* Expansion of Online Education: By developing more robust online and hybrid programs, VCU can attract non-traditional students and those seeking flexible learning options, expanding its reach beyond the Richmond area.
* Strengthening Industry Partnerships: Enhancing collaborations with local industries, particularly in healthcare, technology, and the arts, can provide students with practical experience and improve job placement rates post-graduation.
* Diversity and Inclusion Initiatives: Building upon its diverse student body, VCU has the opportunity to become a leader in inclusive education practices, attracting a broader range of students and faculty.

## Threats

* Competitive Higher Education Landscape: VCU faces competition from other institutions in Virginia and nationally, which may affect student enrollment and funding opportunities.
* State Funding Volatility: As a public university, VCU's financial stability is partially dependent on state funding, which can fluctuate based on economic conditions and political decisions.
* Changing Demographics: Shifts in population demographics, such as declining numbers of high school graduates in certain regions, could impact future enrollment figures.

**SWOT Initial Prompt #2 - DeepSeek-V2**

**Prompt:**

Generate a SWOT analysis for Virginia Commonwealth University, a higher education institution based in Richmond, VA.

Strengths

* Strong Academic Programs – VCU is renowned for its top-ranked programs in arts (VCUarts), healthcare (VCU Health), and social work, attracting high-caliber students and faculty.
* Urban Location – Located in Richmond, VA, VCU benefits from proximity to government, business, and cultural resources, providing students with internship and employment opportunities.
* Research Excellence – As an R1 research institution, VCU receives significant federal and private research funding, particularly in health sciences and engineering.
* Diversity & Inclusion – VCU has a strong commitment to diversity, with a multicultural student body and initiatives supporting underrepresented groups.
* VCU Health System – The university’s integrated medical center enhances clinical training, research, and community health outreach.

Weaknesses

* High Tuition Costs – Like many public universities, rising tuition and fees may deter some students, despite financial aid options.
* Limited On-Campus Housing – Due to its urban setting, housing shortages can be a challenge, forcing students to seek off-campus options.
* Commuter School Perception – A significant number of students commute, which may impact campus engagement and student life.
* Dependence on State Funding – Budget cuts in state funding could affect program offerings and infrastructure development.

Opportunities

* Expansion of Online Programs – Growing demand for online education presents an opportunity to expand VCU’s reach and attract non-traditional students.
* Partnerships with Local Industries – Strengthening ties with Richmond’s business, tech, and healthcare sectors can enhance job placement and co-op programs.
* Increased Focus on STEM – Expanding STEM and tech-related programs could attract more students and research grants.
* Community Engagement & Economic Development – VCU can further leverage its urban location to drive local economic growth through innovation hubs and startups.

Threats

* Competition from Other Virginia Universities – Institutions like UVA, Virginia Tech, and George Mason compete for students, funding, and faculty.
* Declining Enrollment Trends – Demographic shifts and skepticism about the value of higher education may impact enrollment.
* Political & Budgetary Challenges – Changes in state higher education policies or funding cuts could constrain growth.
* Public Safety Concerns – Being in an urban area, crime and safety perceptions could affect student recruitment and retention.

Conclusion

VCU’s strengths in academics, research, and diversity position it well for growth, but challenges like affordability and competition require strategic planning. Expanding online offerings, deepening industry partnerships, and enhancing student support services could help VCU maintain its competitive edge.

**Comparison and Analysis (Initial)**

Both ChatGPT and DeepSeek-V2 produced complete SWOT analysis for Virginia Commonwealth University (VCU), but their outputs differed in depth, tone, and specificity.

**ChatGPT’s** response was more detailed and polished, offering concrete facts such as VCU’s $500 million in sponsored research and its top-50 national research ranking. Its breakdown of strengths and weaknesses provided examples tied directly to higher education, including issues with adjunct faculty reliance and infrastructure challenges. The tone was formal and well-suited for professional or academic use.

**DeepSeek-V2’s** analysis, while still accurate, was slightly more generalized. It included strong points like public safety concerns and the perception of VCU as a commuter school, which ChatGPT did not mention. However, it lacked the same level of numerical or research-backed specifics. Its summary at the end added a nice touch of reflection, even though it wasn’t part of the prompt.

Overall, ChatGPT delivered a more comprehensive and refined SWOT analysis, while DeepSeek-V2 offered slightly more variety in ideas but in a less polished format.

### **SWOT Iteration 1 #1 – ChatGPT**

**Prompt:**Generate a SWOT analysis for Virginia Commonwealth University, a higher education institution based in Richmond, VA. Include specific examples for each category (Strengths, Weaknesses, Opportunities, Threats) and focus on the university’s use of data analytics, research impact, and ties to industry.

## **Strengths**

### **1. Robust Data Analytics Programs**

VCU's School of Business offers comprehensive programs in data analytics, including the Master of Decision Analytics and concentrations in data analytics across accounting, marketing, and supply chain management. These programs prepare students for high-demand careers in big data and data-driven decision-making.

### **2. Significant Research Impact**

VCU is classified as an R1 research institution, indicating very high research activity. In fiscal year 2024, the university secured over $500 million in sponsored research funding, placing it among the top 50 research universities nationally.

### **3. Strategic Industry Collaborations**

The university actively fosters industry partnerships through initiatives like the Wright Center for Clinical and Translational Research, which collaborates with industry to improve community health.

### **4. Commitment to Data-Driven Research**

VCU's Data Science Lab supports rigorous and reproducible research by promoting best practices in data science methodologies. The lab offers training programs and tools to enhance research quality across disciplines.

## **Weaknesses**

### **1. Dependence on Adjunct Faculty**

VCU has faced criticism for its reliance on adjunct faculty, particularly concerning compensation and job security, which may affect faculty morale and student learning experiences.

### **2. Infrastructure Limitations**

Some campus facilities are outdated, with reports of limited availability of modern classrooms and technology resources, potentially impacting the quality of education and student satisfaction.

### **3. Course Availability Challenges**

Students have reported difficulties in enrolling in required courses due to limited class offerings and scheduling conflicts, which can delay graduation timelines.

## **Opportunities**

### **1. Expansion of Tech Bootcamps**

VCU has partnered with the Institute of Data to offer tech bootcamps in areas like data analytics and artificial intelligence. These programs provide practical training for nontraditional students, expanding the university's reach and addressing workforce demands.

### **2. Enhanced Industry Engagement**

The university's advisory boards, comprising alumni and industry leaders, offer opportunities for mentorship and collaboration, ensuring that academic programs align with market needs.

### **3. Development of Interdisciplinary Research Centers**

VCU's numerous research centers and institutes work across disciplines to create new knowledge, fostering innovative collaborations that can lead to significant advancements in various fields.

## **Threats**

### **1. Competitive Higher Education Landscape**

VCU faces competition from other institutions in Virginia and nationally, which may affect student enrollment and funding opportunities.

### **2. State Funding Volatility**

As a public university, VCU's financial stability is partially dependent on state funding, which can fluctuate based on economic conditions and political decisions.

### **3. Rapid Technological Changes**

The fast-paced evolution of technology requires continuous updates to curricula and infrastructure, posing challenges in maintaining cutting-edge programs and facilities.

**SWOT Iteration 1 #2 – DeepSeek-V2**

**Prompt:**Generate a SWOT analysis for Virginia Commonwealth University, a higher education institution based in Richmond, VA. Include specific examples for each category (Strengths, Weaknesses, Opportunities, Threats) and focus on the university’s use of data analytics, research impact, and ties to industry.

Strengths

Leading Research & Data Analytics Capabilities

VCU is classified as an R1 (Very High Research Activity) institution, with strong research output in health sciences, engineering, and social sciences.

The VCU School of Data Science (established in 2019) is Virginia’s first standalone data science school, offering cutting-edge programs in AI, machine learning, and big data analytics.

Example: VCU’s Data Science for the Public Good program partners with state agencies to apply analytics to urban planning, public health, and policy.

Strong Industry Partnerships & Workforce Development

VCU collaborates with Fortune 500 companies (Capital One, Altria, CarMax), healthcare systems (VCU Health, HCA), and government agencies (Virginia DEQ, Richmond City).

Example: The VCU College of Engineering works with Amazon Web Services (AWS) to support cloud computing and cybersecurity research.

Urban-Embedded Campus with Real-World Impact

Richmond’s growing tech and startup scene provides experiential learning opportunities.

Example: The VCU da Vinci Center for Innovation partners with companies like DuPont and Siemens on interdisciplinary product development projects.

Weaknesses

Limited Data Infrastructure & Integration Across Disciplines

While VCU has strong pockets of data analytics expertise (e.g., School of Data Science, Biostatistics), silos exist between departments, limiting cross-disciplinary collaboration.

Example: Healthcare analytics research at VCU Health isn’t always integrated with business or policy analytics at the Wilder School.

Dependence on Federal & State Research Funding

VCU receives significant NIH and NSF funding, but budget fluctuations can impact long-term projects.

Example: In 2022, VCU ranked #78 in federal R&D expenditures (NSF data), trailing larger peers like UVA and Virginia Tech.

Challenges in Commercializing Research

VCU lags behind some peers in tech transfer and startup creation.

Example: VCU’s Innovation Gateway (tech transfer office) had 6.8Minlicensingrevenue(2022)∗∗,comparedto∗∗UVA’s31.4M.

Opportunities

Expanding Data Science & AI Collaborations

VCU could leverage its Richmond location to build stronger ties with federal agencies (FBI, NIH) and corporations needing data-driven solutions.

Example: Partnering with Capital One’s AI/ML teams to develop fintech and cybersecurity talent pipelines.

Growth in Health & Biomedical Analytics

VCU Health’s vast patient data could be harnessed for AI-driven precision medicine.

Example: Expanding partnerships with Pfizer or Johnson & Johnson for clinical trial analytics.

Richmond’s Emerging Tech & Startup Ecosystem

VCU could position itself as the anchor institution for Richmond’s AI, biotech, and advanced manufacturing sectors.

Example: The Virginia Bio+Tech Park (adjacent to VCU) could become a hub for VCU-led health data startups.

Threats

Competition from Peer Institutions

UVA (Biocomplexity Institute), Virginia Tech (AI & HPC), and George Mason (Data Science) are investing heavily in analytics, drawing talent and funding away from VCU.

Data Privacy & Ethical Concerns

As VCU expands AI/ML research, ethical concerns (e.g., bias in healthcare algorithms) could lead to regulatory scrutiny.

Example: VCU’s use of predictive analytics in criminal justice or admissions could face backlash if not transparent.

Economic & Political Risks

Virginia’s shifting political climate may impact higher education funding, affecting VCU’s research expansion.

Example: State budget cuts could delay the planned $300M STEM building for engineering and data science.

Strategic Recommendations

✅ Leverage Data Science Across Disciplines – Break down silos between health, business, and policy analytics.

✅ Boost Industry-Academia Partnerships – Expand corporate-sponsored research (e.g., AWS, Capital One, VCU Health).

✅ Enhance Tech Transfer & Startups – Strengthen Innovation Gateway to compete with UVA and Virginia Tech.

✅ Address Affordability & Access – Use predictive analytics to improve student retention and financial aid allocation.

**Comparison and Analysis (Iteration 1)**

In this iteration, both ChatGPT and DeepSeek-V2 produced more targeted and informative SWOT analyses that focused on data analytics, research impact, and industry ties.

**ChatGPT’s** response maintained a clear, professional tone and emphasized academic programs, research funding, and the integration of data analytics into multiple disciplines. It introduced specific institutional initiatives like the Data Science Lab and tech bootcamps. While it leaned on general university strengths, it effectively aligned those with analytics-related opportunities and weaknesses, such as decentralized data systems and adjunct faculty impact on technical instruction.

**DeepSeek-V2**, on the other hand, went deeper into real-world partnerships and use cases. It mentioned detailed collaborations with companies like AWS, Capital One, and DuPont, and highlighted the creation of Virginia’s first standalone School of Data Science. It also provided examples tied to tech transfer, public health data use, and even policy analytics, which ChatGPT didn’t cover. The structure was slightly more varied, with embedded recommendations that added practical value beyond the standard SWOT format.

Overall, **DeepSeek-V2 provided a more applied, example-rich analysis**, especially useful from an industry-facing or real-world perspective. **ChatGPT remained stronger in polish and flow**, but was a bit more generalized in terms of concrete partnerships or tech-specific developments.

### **SWOT Iteration 2 #1 – ChatGPT**

**Prompt:**Generate a SWOT analysis for Virginia Commonwealth University, a higher education institution based in Richmond, VA, in a concise, bullet-point format. Focus on the university’s use of data analytics, research impact, and industry ties. Maintain a professional tone.

**Strengths**

* R1 designation for very high research activity, with over $500M in annual research funding
* Strong data analytics programs across business, health, and engineering disciplines
* VCU Data Science Lab promotes best practices in reproducible research
* Strategic location in downtown Richmond provides access to government, health, and private sector partnerships
* Active industry collaborations through centers like the Wright Center for Clinical and Translational Research

**Weaknesses**

* Limited availability of advanced tech infrastructure in certain departments
* Heavy reliance on adjunct faculty in some academic units may affect continuity and research mentorship
* Some challenges with course availability and scheduling in high-demand programs
* Coordination across interdisciplinary research units can be inconsistent

**Opportunities**

* Growing demand for data analytics talent offers expansion potential for certificate and bootcamp programs
* Enhanced partnerships with tech and healthcare firms in Richmond and Northern Virginia
* Development of cross-disciplinary research initiatives in AI, public health, and urban studies
* Increasing availability of federal and private research grants targeting applied data science and innovation

**Threats**

* Competitive regional landscape, including UVA, Virginia Tech, and George Mason, for research dollars and student enrollment
* Budget constraints tied to fluctuating state funding and economic cycles
* Rapid technology evolution requiring constant curriculum and infrastructure updates
* Potential talent drain to private industry offering higher salaries in data science and analytics

### **SWOT Iteration 2 #2 – DeepSeek-V2**

**Prompt:**Generate a SWOT analysis for Virginia Commonwealth University, a higher education institution based in Richmond, VA, in a concise, bullet-point format. Focus on the university’s use of data analytics, research impact, and industry ties. Maintain a professional tone.

Strengths

* R1 Research Institution: High-impact research in health sciences, engineering, and social sciences with significant NIH/NSF funding.
* School of Data Science: Virginia’s first standalone data science school, offering AI, machine learning, and public-sector analytics programs.
* Industry Partnerships: Strong ties with Capital One, VCU Health, Amazon Web Services, and Virginia Bio+Tech Park for applied research and workforce development.
* Urban Location: Proximity to Richmond’s tech and healthcare sectors enables real-world data applications and internships.

Weaknesses

* Siloed Data Efforts: Limited integration between healthcare (VCU Health), business, and policy analytics disciplines.
* Moderate Tech Transfer: Lower licensing revenue (6.8Min2022)comparedtopeerslikeUVA(31.4M).
* Funding Dependence: Reliance on federal/state grants exposes research projects to budgetary volatility.

Opportunities

* AI/ML Expansion: Grow partnerships with federal agencies (NIH, FBI) and corporations (e.g., Capital One’s AI labs).
* Health Data Innovation: Leverage VCU Health’s patient data for precision medicine and clinical trial analytics.
* Richmond Tech Ecosystem: Position VCU as an anchor for biotech and advanced manufacturing startups.

Threats

* Peer Competition: UVA, Virginia Tech, and George Mason investing heavily in data science and AI.
* Ethical Risks: Potential backlash over biased algorithms in admissions, criminal justice, or healthcare.
* State Funding Cuts: Political shifts could delay planned STEM infrastructure (e.g., $300M engineering/data science building).

Strategic Priorities:

* Cross-disciplinary data integration.
* Corporate-sponsored research expansion.
* Strengthened tech transfer and startup support.

**Comparison and Analysis (Iteration 2)**

In this iteration, both ChatGPT and DeepSeek-V2 successfully delivered concise, bullet-point SWOT analyses with a professional tone, as prompted. The structure of each was clear and easy to follow, though their focus and depth varied.

**ChatGPT’s** output emphasized practical academic and research initiatives with a balanced tone. It integrated data analytics themes across multiple departments and highlighted the strategic role of centers like the Wright Center and Data Science Lab. The weaknesses and threats were realistic and relevant to institutional growth, such as reliance on adjunct faculty and the risk of talent loss to the private sector. While it didn’t include external figures or company names, its clean formatting and clarity made it well-suited for professional or interview use.

**DeepSeek-V2** leaned more heavily into specific partnerships and external metrics, such as licensing revenue figures and industry collaborations with AWS, Capital One, and Virginia Bio+Tech Park. Its analysis focused more on positioning VCU within the broader tech and research ecosystem, including precise examples like the $300M STEM building and ethical concerns in AI. While it packed in strong industry references, it occasionally felt more like a business case than a general SWOT summary.

Overall, **ChatGPT provided the more polished and context-aware version**, while **DeepSeek-V2 brought in sharper real-world examples and stats**. The choice between them would depend on the intended use — ChatGPT for clean, professional delivery; DeepSeek for investor-style or research-intensive focus.

### **SWOT Iteration 3 #1 – ChatGPT**

**Prompt:**Generate a SWOT analysis for Virginia Commonwealth University, a higher education institution based in Richmond, VA, from the perspective of a data analytics candidate preparing for an interview. In a concise, bullet-point format, highlight how data analytics impacts the university’s Strengths (e.g., leveraging data for research and decision-making), Weaknesses (e.g., gaps in data infrastructure), Opportunities (e.g., expansion of analytics programs), and Threats (e.g., privacy or compliance risks). Use a professional tone.

**Strengths**

* R1 research status reflects a strong culture of data-driven inquiry and high-impact analytics-based research
* VCU leverages institutional data for strategic planning, enrollment forecasting, and academic performance tracking
* Robust analytics programs in the School of Business and College of Health Professions prepare students for applied roles
* Dedicated resources like the VCU Data Science Lab support reproducibility, data ethics, and interdisciplinary collaboration

**Weaknesses**

* Inconsistent data infrastructure and integration across departments may hinder real-time decision-making
* Limited centralized access to analytics tools and platforms for non-technical stakeholders
* Underutilization of predictive analytics in areas like student retention and resource optimization
* Challenges in standardizing data governance and documentation practices across schools and units

**Opportunities**

* Expanding demand for data analytics in higher education positions VCU to grow its offerings (e.g., certificates, online bootcamps)
* Partnerships with Richmond-area industries can provide experiential learning and real-world data projects for students
* Opportunity to enhance institutional research using machine learning and AI for student success, budgeting, and public health
* Increased investment in cloud-based analytics platforms and dashboards to improve administrative transparency

**Threats**

* Data privacy regulations (e.g., FERPA, HIPAA) create compliance risks if analytics processes are not tightly controlled
* Cybersecurity threats to research and institutional data could undermine trust and operational continuity
* Competition from peer institutions with more advanced data infrastructure and analytics maturity
* Risk of over-reliance on vendor solutions without internal capacity building or sustainability planning

### **SWOT Iteration 3 #2 – DeepSeek-V2**

**Prompt:**Generate a SWOT analysis for Virginia Commonwealth University, a higher education institution based in Richmond, VA, from the perspective of a data analytics candidate preparing for an interview. In a concise, bullet-point format, highlight how data analytics impacts the university’s Strengths (e.g., leveraging data for research and decision-making), Weaknesses (e.g., gaps in data infrastructure), Opportunities (e.g., expansion of analytics programs), and Threats (e.g., privacy or compliance risks). Use a professional tone.

Strengths

* Data-Driven Research: R1 institution with strong NIH/NSF-funded projects leveraging analytics in health sciences, engineering, and social sciences.
* School of Data Science: Virginia’s first dedicated data science school, offering cutting-edge AI/ML programs and public-sector partnerships (e.g., Data Science for the Public Good).
* Industry Collaborations: Partnerships with Capital One, AWS, and VCU Health provide real-world datasets and applied analytics opportunities.
* Predictive Analytics: Institutional research uses data to optimize student retention, enrollment, and resource allocation.

Weaknesses

* Data Silos: Disconnected systems between VCU Health, academic units, and administration limit cross-functional insights.
* Infrastructure Gaps: Some legacy systems lack cloud integration, slowing large-scale analytics projects.
* Skill Gaps: Limited faculty/student expertise in emerging areas like AI ethics or federated learning.

Opportunities

* Program Expansion: Growing demand for analytics certificates, executive education, and online programs.
* Health Analytics Leadership: Potential to leverage VCU Health’s clinical data for AI-driven precision medicine and operational efficiency.
* Smart City Initiatives: Partner with Richmond to apply analytics to urban challenges (transportation, equity, sustainability).

Threats

* Privacy/Compliance Risks: HIPAA/FERPA regulations constrain healthcare and student data usage.
* AI Bias Concerns: Reputational risks if algorithms in admissions or research perpetuate bias.
* Talent Competition: Rival universities (UVA, Virginia Tech) offer higher salaries for data science faculty/researchers.

Interview Talking Points:

* Highlight experience bridging data silos or working with regulated data (e.g., healthcare, education).
* Discuss how you’d expand VCU’s analytics partnerships or infrastructure.
* Address ethical AI/risk mitigation strategies.

**Comparison and Analysis (Iteration 3)**

In this final iteration, both models effectively framed the SWOT analysis from the perspective of a data analytics candidate preparing for an interview. The structure was clean and bullet-based, with a focus on analytics applications in research, operations, and partnerships.

**ChatGPT** delivered a highly relevant and polished response that integrated institutional analytics usage across multiple levels — from academic programs to administrative strategy. It clearly identified gaps in infrastructure, governance, and tool access, while suggesting scalable solutions like cloud platforms and predictive analytics for student retention. The tone was interview-ready and demonstrated a strong grasp of internal analytics challenges and opportunities.

**DeepSeek-V2** provided more external-facing examples, such as smart city initiatives and specific partnerships (e.g., AWS, Capital One). It also added a helpful “Interview Talking Points” section at the end, which gives candidates actionable insights on what to say in a real interview. While slightly more technical in some areas, it offered excellent real-world depth, though it occasionally lacked the internal focus ChatGPT emphasized.

Overall, **ChatGPT’s output was the best fit for a professional interview setting**, offering a clear internal view of VCU's data ecosystem and how a candidate might contribute. **DeepSeek-V2 excelled in external partnerships and innovation framing**, but ChatGPT’s version had a more complete and strategic alignment with the field.