Senior Data Scientist, Wharton Graduate Division

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University Overview

The University of Pennsylvania, the largest private employer in Philadelphia, is a world-renowned leader in education, research, and innovation. This historic, Ivy League school consistently ranks among the top 10 universities in the annual U.S. News & World Report survey. Penn has 12 highly-regarded schools that provide opportunities for undergraduate, graduate and continuing education, all influenced by Penn's distinctive interdisciplinary approach to scholarship and learning. As an employer Penn has been ranked nationally on many occasions with the most recent award from Forbes who named Penn one of America's Best Large Employers in 2023.

Penn offers a unique working environment within the city of Philadelphia. The University is situated on a beautiful urban campus, with easy access to a range of educational, cultural, and recreational activities. With its historical significance and landmarks, lively cultural offerings, and wide variety of atmospheres, Philadelphia is the perfect place to call home for work and play.

The University offers a competitive benefits package that includes excellent healthcare and tuition benefits for employees and their families, generous retirement benefits, a wide variety of professional development opportunities, supportive work and family benefits, a wealth of health and wellness programs and resources, and much more.

Posted Job Title
Senior Data Scientist, Wharton Graduate Division

Job Profile Title

Job Description Summary
The Senior Data Scientist - Algorithmic Systems is a key member of the Data Science team supporting the full-time, Executive, and Global Wharton MBA programs. Reporting to the Director of Data Science, this role is instrumental in advancing analytics-driven solutions that enhance the student experience and improve office productivity.

This position will lead the enhancement, maintenance, and expansion of Wharton's Course Match registration system-Wharton's MBA registration system that allocates course schedule. As a technically advanced implementation of modern mechanism design, Course Match is central to the MBA academic experience and requires continued refinement and innovation. The Senior Data Scientist will contribute directly to its algorithm and infrastructure integration, with responsibilities spanning optimization tuning, heuristic development (e.g., Tabu Search), performance diagnostics, and production-level feature development. The role demands expertise in mixed-integer programming (MIP), fluency in Python, and the ability to deliver clean, modular, and maintainable production code.

The position also plays a strategic role in evaluating and integrating a new optimization engine into Course Match, collaborating with internal stakeholders such as the MBA Program Office, Wharton Computing, and the University Registrar, and engaging with external vendors to ensure system robustness, scalability, and alignment with institutional practices, policies, and priorities.

Beyond Course Match, the Senior Data Scientist will contribute to a broader portfolio of academic affairs and data science initiatives, including AI integration, predictive modeling, statistical analysis, machine learning, and analytics infrastructure development. A major focus will be building reusable, scalable, and automated Python-based solutions that enable long-term innovation within the MBA Program Office and Wharton Computing.

The ideal candidate brings a strong background in algorithmic systems and applied data science, with a demonstrated ability to manage complex technical projects from ideation through deployment. They will be adept at translating technical insights for diverse audiences, fostering cross-functional collaboration, and providing mentorship and thought leadership to colleagues. Outstanding communication skills and a highly collaborative mindset are essential.

**This role is a two-year appointment, with the potential for continuation.

Job Description

Duties

- Lead development and ownership of Course Match
- Serve as the primary developer and systems owner for Course Match registration system, including algorithm and infrastructure integration.
- Algorithmic and performance refinement
- Design and implement enhancements to Course Match's algorithmic infrastructure, including optimization tuning, performance analysis, heuristic development (e.g., Tabu Search), mixed-integer programming (MIP), and system diagnostics.
- Internal and external collaboration and system integration
- Partner with internal stakeholders and external vendors to support the integration of a new optimization engine. Participate in vendor evaluation, architecture planning, and system design discussions to ensure successful deployment and infrastructure integration.
- Data science project contributions beyond Course Match
- Contribute to high-impact academic affairs and data science initiatives beyond Course Match, including AI integration, process automation, and machine learning. Build robust Python-based solutions that promote reusability, automation, and scalability.
- Infrastructure development and automation
- Develop and maintain analytics infrastructure and automation pipelines to support data workflows across the MBA Program Office and Wharton Computing. Apply best practices in software development, testing, and version control.

Qualifications

- Master's degree and 1-2 years of experience in a quantitative field such as Engineering, Data Science, Computer Science, Operations Research, Mathematics, or a related discipline is required; however, a Master's degree and at least 5 years of relevant experience is strongly preferred.
- Strong programming proficiency in Python is required, including experience developing modular, well-documented, and production-grade code. Familiarity with version control systems (e.g., Git) and test-driven development is strongly preferred.
- Demonstrated expertise in algorithmic systems or large-scale computational frameworks, with hands-on experience in one or more of the following: heuristic search methods (e.g., Tabu Search), combinatorial optimization, mixed-integer programming (MIP), or algorithmic market design.
- Experience working within multi-component software environments and integrating external libraries, APIs, or platforms. Familiarity with systems integration and data engineering practices is preferred.

- Experience supporting or participating in vendor evaluations or third-party system integrations is strongly preferred. Ability to engage with external vendors on technical system design, performance review, and implementation.
- Applied experience with core data science methods, including statistical modeling, predictive analytics, and machine learning. Proficiency with tools such as R, SQL, and Power BI is a plus.

Job Location - City, State
Philadelphia, Pennsylvania

Department / School
Wharton School

Pay Range
$100,000.00 - $140,000.00 Annual Rate
Salary offers are made based on the candidate's qualifications, experience, skills, and education as they directly relate to the requirements of the position, and in alignment with salary ranges based on external market data for the job's level. Internal organization and peer data at Penn are also considered.

Equal Opportunity Statement

The University of Pennsylvania is an equal opportunity employer. Candidates are considered for employment without regard to race, color, sex, sexual orientation, religion, creed, national origin (including shared ancestry or ethnic characteristics), citizenship status, age, disability, veteran status or any class protected under applicable federal, state or local law.

Special Requirements
Background checks may be required after a conditional job offer is made. Consideration of the background check will be tailored to the requirements of the job.

University Benefits

- **Health, Life, and Flexible Spending Accounts**: Penn offers comprehensive medical, prescription, behavioral health, dental, vision, and life insurance benefits to protect you and your family's health and welfare. You can also use flexible spending accounts to pay for eligible health care and dependent care expenses with pre-tax dollars.
- **Tuition**: Take advantage of Penn's exceptional tuition benefits. You, your spouse, and your dependent children can get tuition assistance here at Penn. Your dependent children are also eligible for tuition assistance at other institutions.
- **Retirement:** Penn offers generous retirement plans to help you save for your future. Penn's Basic, Matching, and Supplemental retirement plans allow you to save for retirement on a pre-tax or Roth basis. Choose from a wide variety of investment options through TIAA and Vanguard.

- **Time Away from Work:** Penn provides you with a substantial amount of time away from work during the course of the year. This allows you to relax, take vacations, attend to personal affairs, recover from illness or injury, spend time with family-whatever your personal needs may be.
- **Long-Term Care Insurance:** In partnership with Genworth Financial, Penn offers faculty and staff (and your eligible family members) long-term care insurance to help you cover some of the costs of long-term care services received at home, in the community or in a nursing facility. If you apply when you're newly hired, you won't have to provide proof of good health or be subject to underwriting requirements. Eligible family members must always provide proof of good health and are subject to underwriting.
- **Wellness and Work-life Resources**: Penn is committed to supporting our faculty and staff as they balance the competing demands of work and personal life. That's why we offer a wide variety of programs and resources to help you care for your health, your family, and your work-life balance.
- **Professional and Personal Development:** Penn provides an array of resources to help you advance yourself personally and professionally.
- **University Resources:** As a member of the Penn community, you have access to a wide range of University resources as well as cultural and recreational activities. Take advantage of the University's libraries and athletic facilities, or visit our arboretum and art galleries. There's always something going on at Penn, whether it's a new exhibit at the Penn Museum, the latest music or theater presentation at the Annenberg Center, or the Penn Relays at Franklin Field to name just a few examples. As a member of the Penn community, you're right in the middle of the excitement-and you and your family can enjoy many of these activities for free.
- **Discounts and Special Services**: From arts and entertainment to transportation and mortgages, you'll find great deals for University faculty and staff. Not only do Penn arts and cultural centers and museums offer free and discounted admission and memberships to faculty and staff. You can also enjoy substantial savings on other goods and services such as new cars from Ford and General Motors, cellular phone service plans, movie tickets, and admission to theme parks.
- **Flexible Work Hours:** Flexible work options offer creative approaches for completing work while promoting balance between work and personal commitments. These approaches involve use of non-traditional work hours, locations, and/or job structures.
- **Penn Home Ownership Services:** Penn offers a forgivable loan for eligible employees interested in buying a home or currently residing in West Philadelphia, which can be used for closing costs or home improvements.
- **Adoption Assistance:** Penn will reimburse eligible employees on qualified expenses in connection with the legal adoption of an eligible child, such as travel or court fees, for up to two adoptions in your household.

To learn more, please visit: https://www.hr.upenn.edu/PennHR/benefits-pay

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