Computer Science Portfolio Essay

Tebibu Kebede

Spring 2024: DRAFT 0

Submission Date: January 25, 2023

Outcome 1: Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.

I intend to meet this outcome by actively participating in a variety of computing projects throughout my academic journey. Here are potential performance indicators and evidence I may use:

Performance Indicators:
1. Demonstrate the ability to analyze a task, considering client domain, policies, technical stack, and preferences, and plan for completion based on the analysis.
2. Plan, test, and implement appropriate computing solutions, considering iterative feedback processes.

Potential Evidence:

1. Academic Projects: As part of my coursework, I will engage in various computing projects where I will analyze complex problems, considering different aspects such as client needs, policies, and technical requirements. I will document these projects, showcasing my ability to create comprehensive plans for problem-solving.
2. User Interface Design: In interactive computing projects, I will design and test user interfaces while incorporating iterative feedback from users or instructors.
3. Presentations: I will participate in project presentations where I'll articulate problem analyses and computing theory applications, demonstrating my ability to communicate effective solutions.

Outcome 2: Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of computer science.

> As a team lead this semester, I've embraced the responsibility of guiding my team through the complexities of our computing projects. My role involves not only technical execution but also ensuring that each team member's contribution aligns seamlessly with our project goals. This experience is honing my skills in project planning, execution, and

quality assurance, ensuring that our computing solutions are robust, efficient, and meet the specified requirements.

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Performance Indicators:
1. Demonstrate the ability to design, implement, and evaluate computing solutions to meet specific requirements.
2. Effectively communicate project deliverables and plans to clients or stakeholders.

Potential Evidence:

1. Academic Projects: In my upcoming computer science coursework, I plan to actively engage in academic projects that require designing, implementing, and evaluating computing solutions. For instance, I intend to participate in a software engineering project that involves developing a web application from scratch, addressing project requirements, and delivering a functional solution.
2. Internship or Research Opportunities: I am actively exploring internships or research opportunities where I can apply my computing skills to practical projects. In such roles, I aim to contribute to designing, implementing, and evaluating solutions that align with specific requirements.
3. Open-Source Contributions: I plan to further participate in open-source software projects, collaborating with a global community to design, implement, and evaluate code changes. This will involve understanding project requirements, sharing project deliverables, and assessing solution effectiveness.
4. Communication and Collaboration: I intend to develop strong communication skills, enabling me to effectively communicate project deliverables, plans, and results to clients or stakeholders. This will involve clear documentation, presentations, and feedback gathering.
By seeking these opportunities and actively engaging in computing projects, I aim to demonstrate my ability to design, implement, and evaluate computing-based solutions while meeting specific requirements. These experiences will contribute to my growth in computer science.

Outcome 3: Communicate effectively in a variety of professional contexts.

Stepping into a team lead role has significantly enhanced my communication skills. I've learned the importance of clear, concise, and empathetic communication in setting project visions, aligning team efforts, and driving collective success. My interactions with team members are more than task-oriented; they're about fostering a collaborative and supportive environment where everyone's voice is heard and valued.

Performance Indicators:

1. Communicate project details effectively to various audiences.
2. Evaluate and provide feedback on others' writing and presentations.
3. Analyze my communication effectiveness and develop an improvement plan.
4. Professionally present project details in written and spoken form.
5. effectively convey the value I can add to a potential employer during a job application or interview process.

Potential Evidence:

1. Academic Presentations: In my academic coursework, I plan to participate in group projects and presentations where I will communicate project details to peers and instructors. I will ensure that my presentations are clear, well-structured, and tailored to the audience's level of understanding.
2. Peer Feedback: I will actively engage in peer reviews of written reports and presentations. This will involve evaluating the clarity, coherence, and persuasiveness of others' work and providing constructive feedback to help them improve.
3. Self-Reflection: I will regularly reflect on my communication effectiveness, identifying areas for improvement. I will develop an improvement plan that may include practicing public speaking, refining written communication, and seeking mentorship.
4. Client Communications: In project-based courses or internships, I aim to professionally present project details in both written and spoken form to clients or stakeholders. This will demonstrate my ability to tailor communication to the needs of different audiences.
5. Job Application and Interview Preparation: When preparing for job applications and interviews, I will focus on effectively communicating the value I can bring to potential employers. This will involve crafting compelling resumes and cover letters and practicing interview skills.

Outcome 4: Recognize professional responsibilities and make informed and equitable judgments in computing practice based on legal and ethical principles.

I intend to meet this outcome by actively recognizing and embracing professional responsibilities, as well as making informed and equitable judgments in computing practice based on legal and ethical principles. Here are potential performance indicators and actions I may take:

Performance Indicators:

1. Communicate professional development plans and achievements every semester.
2. Document the acquisition of and growth in professional skills and techniques through periodic personnel performance evaluations.
3. Participate in multiple volunteers and/or outreach activities per semester.
Consider data and information security in the context of a project.
4. Document awareness of nondisclosure agreements and professional codes of conduct and their impact on behavior.
5. Fully test project solutions to ensure legal and ethical principles are met.
6. Meet the professional expectations of a computer science student.

Potential Evidence:

1. Professional Development Plans: I plan to consistently communicate my professional development plans and achievements at the beginning and end of each semester. This will include setting goals for skill development and reflecting on my progress.
2. Skill and Technique Documentation: Through periodic personnel performance evaluations, I will document the acquisition and growth of professional skills and techniques. This will demonstrate my commitment to continuous improvement.
3. Volunteer and Outreach Activities: I aim to actively participate in multiple volunteers and outreach activities per semester, contributing to the community, and gaining a broader perspective on ethical responsibilities.
4. Data and Information Security: In all project work, I will consider data and information security aspects. I will document how I incorporate security measures to protect sensitive information and ensure compliance with legal and ethical standards.
5. Awareness of Nondisclosure Agreements and Codes of Conduct: I will document my awareness of nondisclosure agreements and professional codes of conduct. This will involve understanding their implications for behavior and decision-making in computing practice.
6. Comprehensive Testing: I intend to fully test project solutions to ensure that they adhere to legal and ethical principles. This includes verifying that the solutions respect privacy, intellectual property rights, and other legal considerations.
7. Professional Expectations: I will actively work to meet the professional expectations of a computer science student, which encompasses ethical behavior, integrity, and professionalism in the field.

Outcome 5: Function effectively as a member or leader of a team engaged in activities appropriate to computer science.

Transitioning into a team lead role this semester has been a journey of excitement and learning. Leading a team requires not just technical acumen but also the ability to inspire, coordinate, and

motivate. I've been exploring the nuances of project management, conflict resolution, and effective decision-making, ensuring that our team operates harmoniously, and that each member feels valued and understood.

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Performance Indicators:

1. Establish a team contract, set team expectations, and assign appropriate roles.
2. Individually contribute appropriately to the completion of team projects.
3. Create a team time budget based on a list of tasks and milestones within a project.
4. Implement a team course of action to finish all required tasks by a deadline.
5. Evaluate the effectiveness of my ability to lead, manage people, and manage projects; develop a plan for future improvement.
6. Analyze the effectiveness of the group during the project.
7. Evaluate the quality of teamwork achieved and its impact on satisfying project requirements.

Potential Evidence:

1. Team Contracts: I will actively participate in the establishment of team contracts that define team expectations and roles. This will ensure clarity and alignment within the team.
2. Individual Contributions: In team projects, I will make appropriate contributions to ensure project success. My contributions will be documented through project artifacts and peer evaluations.
3. Team Time Budgets: I will work with my team to create time budgets that outline tasks and milestones within a project, promoting effective time management.
4. Team Course of Action: In collaboration with my team, I will implement a course of action to meet project deadlines. Progress will be tracked, and outcomes will be documented.
5. Self-Evaluation and Improvement: I will regularly evaluate my ability to lead, manage people, and manage projects. Based on these evaluations, I will develop plans for continuous improvement in leadership and teamwork skills.
6. Group Effectiveness Analysis: After completing team projects, I will analyze the effectiveness of our group in terms of meeting project objectives and deadlines.
7. Quality of Teamwork: I will assess the quality of teamwork achieved in each project and document how it impacts the satisfaction of project requirements.

Outcome 6: Apply computer science theory and software development fundamentals to produce computing-based solutions.

I intend to meet this outcome by actively applying computer science theory and software

development fundamentals to create practical computing solutions. Here is potential performance indicators and actions I may take:

Performance Indicators:

1. Design an experiment to answer a question related to technical work, including a hypothesis or model of the expected outcome.
2. Document project development work and activities in a legally valid manner.
3. Learn new programming or scripting languages, frameworks, cloud services, or development tools to produce a solution.
4. Demonstrate the use of multiple software engineering processes to address small and large-scale solutions.
5. Document and implement a full development lifecycle for a small or large-scale software project.
6. Demonstrate knowledge of and the ability to implement cross-platform software applications.
7. Demonstrate the ability to apply appropriate software testing approaches.

Potential Evidence:

1. Experimental Design: I will design experiments related to technical work, including hypotheses, or expected outcome models. The documentation of these experiments will showcase my ability to apply computer science theory.
2. Legal Documentation: I will ensure that project development work and activities are documented in a legally valid manner, adhering to ethical and legal standards in software development.
3. Learning New Technologies: As computing technologies evolve, I will actively learn new programming or scripting languages, frameworks, cloud services, or development tools to enhance my capability to produce innovative solutions.
4. Software Engineering Processes: I will apply various software engineering processes, adapting them to address both small and large-scale computing solutions. Documentation of these processes will highlight my software development skills.
5. Development Lifecycle: For small and large-scale software projects, I will document and implement a full development lifecycle, showcasing my ability to manage projects from inception to completion.
6. Cross-Platform Applications: I will demonstrate my knowledge and ability to implement cross-platform software applications, making software accessible across different environments.
7. Software Testing: I will apply appropriate software testing approaches to ensure the reliability and functionality of the solutions I develop.

Outcome 7: Work successfully in a diverse, inclusive environment.

As a team lead, I'm deeply committed to nurturing a diverse and inclusive team environment. I actively encourage open dialogue, respect for different viewpoints, and a culture where every team member feels empowered to contribute. Recognizing and valuing diversity in our team has not only enriched our collaboration but also driven innovation and creativity in our projects.

Performance Indicators:

1. Maintain a daily work environment free from behaviors and speech that are incompatible with an inclusive work environment.
2. Ensure that project processes and results, including communication and documentation, consider accessibility for all potential stakeholders.
3. Make design and process decisions that consider perspectives from a range of stakeholders.
4. Develop an understanding of individual differences and apply it to projects and coursework.
5. Demonstrate an understanding of unconscious bias and microaggressions and their implications.
6. Interact with others professionally and respectfully in all situations, including the learning environment and the workplace.
7. Ability to incorporate positive and critical feedback to improve in all outcome areas.

Potential Evidence:

1. Maintaining Inclusivity: I will actively work to maintain a daily work environment free from behaviors and speech that are incompatible with inclusivity, promoting a respectful and welcoming atmosphere.
2. Accessibility Consideration: In project processes and results, I will ensure that accessibility is considered for all potential stakeholders, including those with diverse needs.
3. Stakeholder Perspectives: I will involve various stakeholders and consider their perspectives when making design and process decisions, ensuring a well-rounded approach.
4. Embracing Diversity: I will develop an understanding of individual differences and apply this understanding in both project work and coursework, valuing diversity.
5. Conscious of Bias: I will educate myself about unconscious bias and microaggressions, recognizing their implications and actively working to mitigate their effects.
6. Professional Interaction: I will consistently interact with others in a professional and respectful manner, recognizing the critical role of respectful communication in fostering inclusivity.
7. Feedback Incorporation: I will demonstrate my ability to incorporate both positive and critical feedback to improve in all outcome areas, showing a commitment to growth and adaptability.

- Alongside my academic and project commitments, I've been proactively expanding my professional network to secure internships. This involves engaging with recruiters, alumni, and industry professionals on LinkedIn, seeking referrals, and gaining insights into potential opportunities.