1. Introduction

Thanks for taking the time to meet with me today.

We are doing a study on the differences between software development for machine learning software versus other kinds of software. During the interview, I'd like to ask you a few questions about your background, then we'll have a discussion about your experience.

Do you mind if I record this discussion so that I can review it later? In any data collected, or in reports or papers that are published, you will not be identified by name. Please be careful not to discuss any sensitive information about the company you work for. If you do mention any, we will do our best to remove it from our transcripts, but better if you don't mention such sensitive information at all.

2. Demographics

2.1 Years of Experience

How many years of development experience do you have in total with software development? And how many years with machine learning development?

	With Machine Learning	Total
Experience (in years)		

2.2 Job Responsibility

Could you please briefly describe your job responsibility with respect to development with machine learning?

2.3 Experience in Job Responsibility

Next, I'm going to name a series of job responsibilities, and I'd like to tell me where you have "none", "some" or "extensive" experience you have for development with ML and traditional software development.

	With Machine Learning	Traditional Software Development
Programming		
Design		
Management		
Testing		

3. Open Ended Discussion

Now, let's have a discussion about your experience. Our objective is to uncover the differences between development with ML and "traditional" software engineering.

Let us start with an open-ended conversation.

In your experience, what are the differences between development with ML and "traditional" software development? [10 minutes]

4. Specific Topic Discussion

Ok, let's move on to the specific ...

[ ] Software engineering topics (See Appendix A).

[ ] General work topics (See Appendix B).

I'm going to show you a list of these topics. Take a couple of minutes to read over the topics.

4.1 Protocol

I'd like you to select 3 topics where development with machine learning and traditional software development differ the most, in your experience. Then, I'll pick 3 other topics.

For each of the 6 topics, I'll ask you to giving a 30 second overview of how that topic relates to development with machine learning. Then, I'll ask you to explain in what ways development with machine learning differs from traditional software development. When you're making contrasts, try to make sure that they are really differences between development with ML and traditional software development, not simply differences between organizations. Any questions about how this will work?

4.2 Questions

Great, so in your experience, what is the topic that most differs between development with ML and traditional software development? And the second most different? Third? [10 minutes]

[Let participant pick 3 topics]

Ok, for _____, summarize for me how that topic relates to development with machine learning.

Now, how does development with ML and traditional software development differ with respect to _____?

(Repeat * 3)

[Interviewer picks 3 topics]

Ok, now my turn. I'd like to talk about _____, _____, and _____.

First, in what way does _____ differ between development with ML and traditional software development?

(Repeat * 3)

Appendix A. Software Engineering Topics

Dimension	Description
Software Requirements	concerned with the elicitation, analysis, specification, and validation of software requirements
Software Design	the process of defining the architecture, components, interfaces, and other characteristics of a system or component and the result of that process.
Software Construction	the detailed creation of working, meaningful software through a combination of coding, verification, unit testing, integration testing, and debugging
Software Testing	an activity performed for evaluating product quality, and for improving it, by identifying defects and problems
Software Maintenance	the modification of a software product after delivery to correct faults, to improve performance or other attributes, or to adapt the product to a modified environment
Software Configuration Management	is the discipline of identifying the configuration of a system at distinct points in time for the purpose of systematically controlling changes to the configuration, and maintaining the integrity and traceability of the configuration throughout the system life cycle
Software Engineering Management	the application of management activities-planning, coordinating, measuring, monitoring, controlling, and reporting-to ensure that the development and maintenance of software is systematic, disciplined, and quantified
Software Engineering Process	the technical and managerial activities within the software life cycle processes that are performed during software acquisition, development, maintenance, and retirement, and at a meta-level, the improvement of the software life cycle processes themselves
Software Engineering Tools and Methods	the computer-based tools that are intended to assist the software life cycle processes
Software Quality	the degree to which a set of inherent characteristics fulfills requirements

From Software Engineering Body of Knowledge (SWEBOK)

Appendix B. Work Topics

Dimension	Description
Work Scheduling Autonomy	the freedom to control the scheduling and timing of work
Work Methods Autonomy	the freedom to control which methods and procedures are utilized
Decision-Making Autonomy	the freedom to make decisions at work
Skill Variety	the extent to which an individual must use different skills to perform his or her job
Task Variety	the extent to which an individual performs different tasks at his or her job
Significance	the extent to which a job impacts others' lives
Task Identity	the extent to which an individual can complete a whole piece of work
Feedback from the Job	the extent to which a job imparts information about an individual's performance
Information Processing	the extent to which a job necessitates an incumbent to focus on and manage information
Job Complexity	the extent to which a job is multifaceted and difficult to perform
Specialization	the extent to which a job involves the performance of tasks requiring specific knowledge and skill
Problem Solving	the extent to which a job requires the production of unique solutions or ideas
Interdependence	the extent to which a job is contingent on others' work and other jobs are dependent on the work of the focal job
Feedback from Others	the extent to which other organizational members provide performance information
Social Support	is the extent to which a job provides opportunities for getting assistance and advice from either supervisors or coworkers
Interaction Outside the Organization	the extent to which a job requires an incumbent to communicate with people (e.g., suppliers or customers) external to the organization Physical Demands the amount of physical activity or effort necessary for a job
Work Conditions	aspects of the work environment such as health hazards, temperature, and noise
Ergonomics	the extent to which work permits appropriate posture and movement
Experienced Meaningfulness	the degree to which an employee feels the job has value and importance
Experienced Responsibility	the degree to which an employee feels liable and accountable for job results
Knowledge of Results	the degree to which the employee is aware of his or her level of performance