**Requirement Analysis – “Smart Sorting” Project**

**1. Entice**  
• Steps  
– Learn about spoilage detection needs (team meeting, news article, waste report)  
– Research automated sorting solutions online  
– Watch demo videos of AI-based classification systems  
– Contact vendor or trial the smart-sorting pilot

• Interactions  
– Company intranet and newsletters  
– Vendor websites or webinars  
– Industry forums and trade shows  
– Initial consultation calls or emails

• Goals & Motivations  
– “Expose me to an easier way than manual fruit inspection”  
– “Help me understand ROI: time saved, waste reduced”  
– “Show me real-world success stories”

• Positive Moments  
– Clear demo of rotten vs. fresh classification  
– Testimonials from similar-sized operations  
– Quick, zero-installation pilot sign-up

• Negative Moments  
– Jargon-heavy marketing materials  
– Unclear pricing or hidden fees  
– No live photos/videos of a working system

• Areas of Opportunity  
– Create simple ROI calculators (waste saved vs. cost)  
– Offer on-premise pilot kits that plug into existing cameras  
– Publish short “day-in-the-life” video case studies

**2. Enter**  
• Steps  
– Unbox and mount cameras over conveyor belt / fridge shelf  
– Install the smart-sorting software or mobile app  
– Calibrate camera view (lighting, angle)  
– Upload initial sample images for model fine-tuning

• Interactions  
– Hardware onboarding wizard in the app  
– Setup guide (PDF or interactive)  
– In-app chatbot or 1:1 support session  
– Calibration slider or live video preview

• Goals & Motivations  
– “Let me get the system up and running in under 30 minutes”  
– “Reassure me that it will work under my lighting conditions”  
– “Help me feed sample images to adapt the model quickly”

• Positive Moments  
– Auto-detects camera and suggests default settings  
– Real-time live preview of classification bounding boxes  
– Visual feedback when calibration is successful

• Negative Moments  
– Lengthy driver or dependency installations  
– Poor calibration guidance (e.g., no lighting tips)  
– Opaque error messages during setup

• Areas of Opportunity  
– Provide one-click installers or Docker images  
– Include a short setup video embedded in app  
– Offer auto-calibration routines using test images

**3. Engage**  
• Steps  
– System continuously captures produce images  
– Preprocessing (resize, normalize) runs in real time  
– Transfer-learning model infers “fresh” vs. “rotten”  
– Display live dashboard with counts and confidence scores

• Interactions  
– Touchscreen control panel or web dashboard  
– Real-time logs and metrics pop-up  
– Push notifications via mobile app or email  
– Audible/visual alert on detection of rotten item

• Goals & Motivations  
– “Let me see spoilage rates at a glance”  
– “Alert me instantly so I can pull rotten items”  
– “Trust the model’s accuracy through confidence metrics”

• Positive Moments  
– High-accuracy detection with <5% false positives  
– Color-coded bounding boxes (green=fresh, red=rotten)  
– Instant notifications routed to the right team

• Negative Moments  
– Lagging frame rates under high throughput  
– Occasional misclassifications on bruised but edible items  
– Dashboard cluttered with too much technical detail

• Areas of Opportunity  
– Optimize for batch inference or edge-accelerated hardware  
– Provide a “review & confirm” mode for borderline cases  
– Simplify dashboard to key KPIs and allow drill-downs

**4. Exit**  
• Steps  
– Operators remove flagged items from the line or fridge  
– Mark each removed item as “true rotten” or “false alert”  
– System logs confirmed cases to improve the model  
– Generate end-of-shift report on spoilage statistics

• Interactions  
– Confirmation prompt on the app or dashboard  
– Manual tagging interface for mislabelled images  
– Automated end-of-day email summary  
– Data export (CSV, JSON) for further analysis

• Goals & Motivations  
– “Make it painless to clear false positives”  
– “Ensure accountability for every removal action”  
– “Get a concise summary without digging through logs”

• Positive Moments  
– One-tap confirmation to correct labels  
– Visual timeline of spoilage events  
– Report delivered to both plant managers and quality teams

• Negative Moments  
– Tedious tagging if many false alerts occur  
– Report too granular or too high-level  
– No export options matching existing analytics workflows

• Areas of Opportunity  
– Batch-correct all on-screen false positives at once  
– Customizable report templates for different roles  
– Direct API hooks into enterprise BI tools

**5. Extend**  
• Steps  
– System suggests optimal storage conditions based on spoilage trends  
– Recommends preventive maintenance for cameras and lights  
– Provides recipe or usage suggestions for produce nearing end-of-life  
– Triggers new data-collection campaigns to expand to other crops

• Interactions  
– Weekly insights email or in-app notification  
– Maintenance schedule pop-up with calendar integration  
– “Recipe of the week” carousel in mobile app  
– Model-update wizard for adding new fruit/vegetable classes

• Goals & Motivations  
– “Help me continuously improve throughput and quality”  
– “Reduce future spoilage—prevent, don’t just react”  
– “Get value beyond just detection (e.g., recipes, maintenance)”

• Positive Moments  
– Noticing spoilage drop 30% month-over-month  
– Getting a push alert: “Your camera lens needs cleaning”  
– Family uses recipe tips to finish produce before it rots

• Negative Moments  
– Notifications feel like spam if too frequent  
– Recommendations irrelevant to local produce availability  
– Users ignore model-update prompts

• Areas of Opportunity  
– Tune alert frequency and timing per user role  
– Localize recipe suggestions by seasonality and region  
– Automate model-update with minimal user input