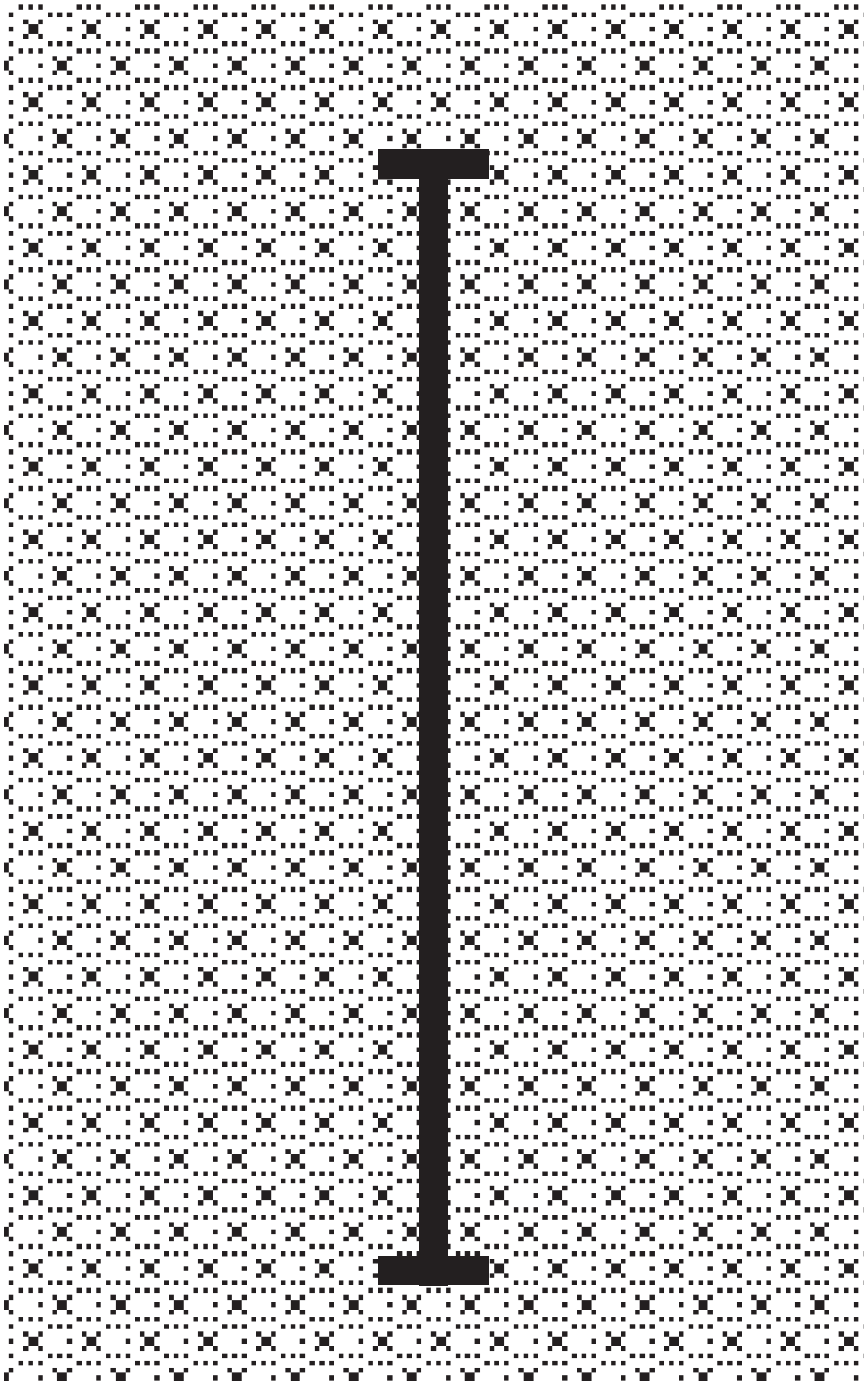
THE BEST INTERFACE IS
NO INTERFACE

TOOLKIT FOR DESIGNERS

BY GOLDEN KRISHNA

FIRST EDITION



Principle One: Embrace Typical Processes Instead of Screens

Cat Poet

To learn the typical processes of your customers you can use observational research. Some observe by putting customers in a controlled environment. Sometimes even, like a lie detector test, sensors are used on those customers to get numerical data about patterns and movements.

A simpler method: studying people doing the thing you're interested in improving in the environment(s) in which they normally do that thing. It's harder to control, and sometimes inconvenient, but a natural setting seems to get more accurate glimpses of how things usually occur.

Social scientists seem to love acronyms for methods to capture these kinds of observations. POSTA (person, objects, situations, time, activity), POEM (people, objects, environments, messages), and AEIOU (activities, environments, interactions, objects, users) are some common methods. Here's one for quickly notating typical processes you'd like to turn into screenless solutions: CAT POET.

C. What is the typical context for the activity?

A. Who are the primary actors?

T. What's the primary task or goal?

P. What's the typical process you'd like to simplify?

O. What objects typically exist in the environment?

E. Does anything need to be explained or communicated to the person(s) involved?

T. What triggers might indicate that the person wants to commit to that action?

Example: Unlocking Car Doors

A simple example mentioned in the *The Best Interface is No Interface*.

C. What is the typical context for the activity?
Parking lot

A. Who are the primary actors?
Driver, passengers

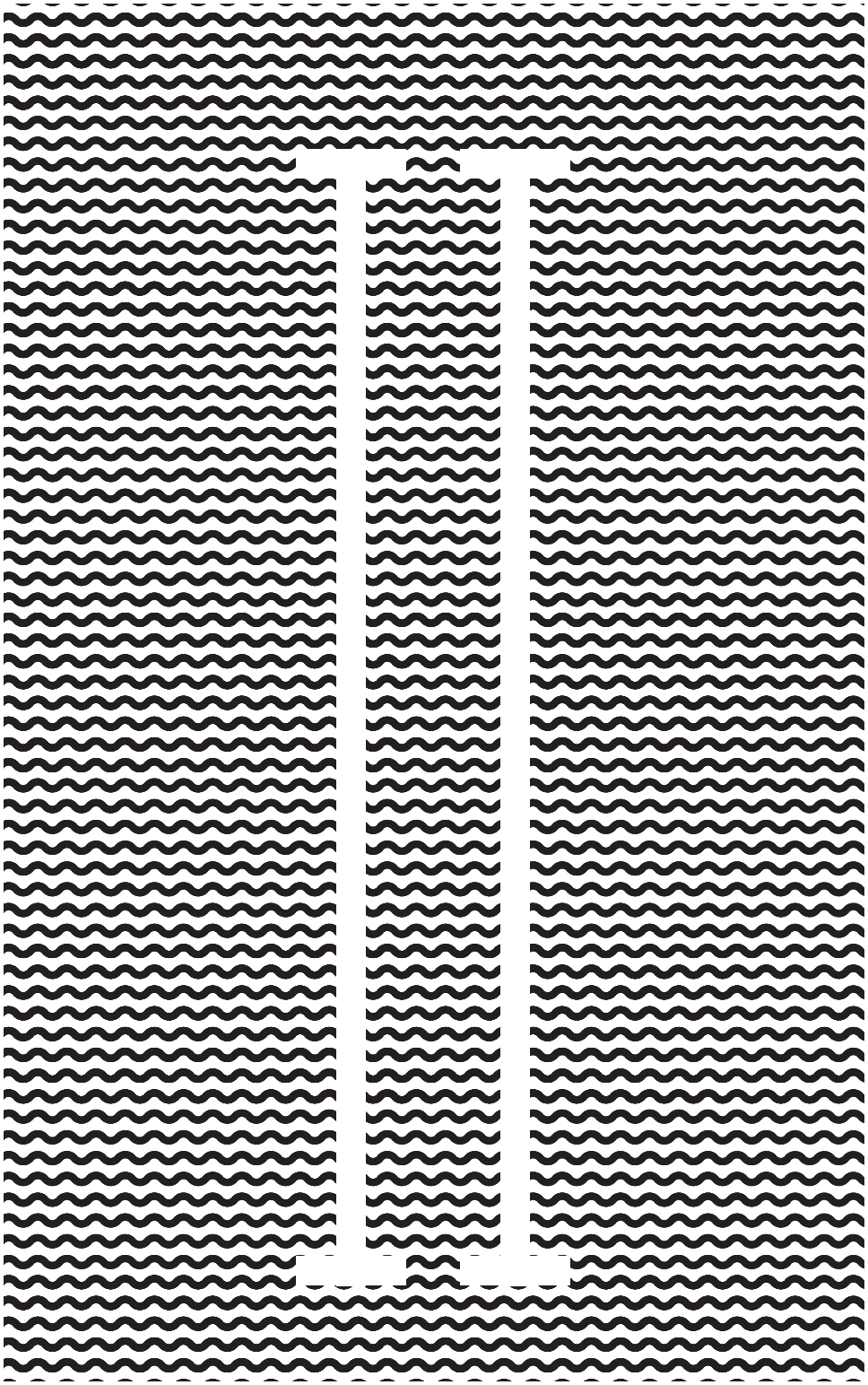
T. What's the primary task or goal?
Opening the car door

P. What's the typical process you'd like to simplify?
1. Walk out of location (store, office)
2. Walk towards car
3. Find keys in pocket in purse
4. Pull out keys
5. Insert key in car door
6. Turn key
7. Open car door

O. What objects typically exist in the environment?
Car door, car keys, shopping cart, street lights, ...

E. Does anything need to be explained or communicated to the person(s) involved?
Car door is open (unlocked)

T. What triggers might indicate that the person wants to commit to that action?
Proximity to door, walking out of office or store, car key distance to car, ...



Principle Two: Leverage Computers Instead of Serving Them

Machine Input Overview

We can reduce, and even eliminate, the need for cumbersome input like painful form fields when we leverage computers by using machine input. When designing your system, try empowering some of these input methods to collect actionable information rather than adding another dropdown menu.

Radio

AM (receive small bits of information)

FM (receive small bits of information)

Bluetooth (send and receive information with nearby devices, typically within a range of 50 feet)

GPS (access your location from a satellite)

NFC (Near field communication, exchange, information when two objects tap each other)

RFID Reader (reads RFID tags, which are low frequency radio signals; for example: an electronic toll on a bridge or highway)

WiFi (send and receive larger amounts of information)

Sensor

Environment

- **Light** (brightness)
- **RGB Light** (color)
- **Barometer** (air pressure)
- **Magnetometer** (magnetic field)
- **Thermometer** (temperature)
- **Hygrometer** (humidity)

Motion

- **Accelerometer** (speed)
- **Gyroscope** (3D rotation)
- **Shock** (impact, common trigger for car alarms)

Position

- **Proximity** (if something is close by)

Sound

- **Microphone** (sounds)

Physiological

- **Heart monitor**

Camera

Photo (still image)

Video (movement)

API

Google

Facebook

Twitter

Foursquare

Yelp

Yahoo!

Web browser

HTML 5

- **Geolocation** (Exact location. Demo: http://html5demos.com/geo)
- **Device Orientation** (3 axis: X, Y, and Z)
- **Battery Status**
- **Clipboard** (Copy, cut, paste events)

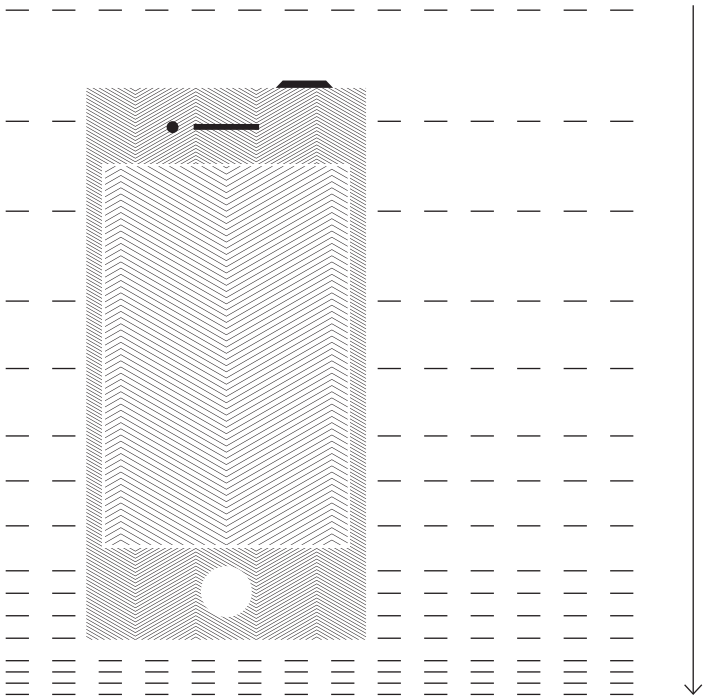
User agent data

- **IP address**
- **Browser**
- **Operating system**
- **Screen resolution**

ENVIRONMENT

Barometer hPa

A barometer measures atmospheric pressure.



PRIMARY USE

What's my altitude?

WEATHER

It's about to rain: A sinking pressure reading? It's likely cloudy and rainy. Before television and Internet reports of the weather, some kept a barometer on the wall of to help predict the weather.

Tornado warning: Although a tornado can form rapidly, it may be possible to detect a drastic drop in air pressure hours, perhaps even days, in advance of a twister.

Maximum hurricane wind speeds: Placing a barometer in the center of a hurricane can help determine the maximum wind speed of a hurricane, helping us prepare an incoming storm.

CONSUMER ELECTRONICS

Battery-saving weather updates: The barometer on your phone probably isn't sophisticated enough to give you a stellar weather forecast, but a change in air pressure might trigger your data plan to see what's happening around you.

Crowd sourced weather: By enabling millions of phones on a shared network, it might be possible to gauge tiny differences in weather throughout a city or even region.

TRAVEL

Knowing you're at the top of the Empire State Building: While your GPS might know you're in the vicinity, a barometer would let your camera know you're taking these photos from the top of The Empire State Building.

Better hiking maps: Changes in elevation can be measured by a barometer, giving you a better sense of how far you've traveled up those Rocky Mountain trials.

Underground maps: In 2015, Japanese wireless service NTT DoCoMo launched an indoor map system for underground trains and malls that launched when the barometer reading indicated that customers went below street level.

RETAIL

Powerful indoor maps: Ultra high-resolution barometers that can detect what floor you're on could be part of a powerful indoor mapping solution to help guide you to the stores you're looking for at your local mall, or even the right aisle inside your nearby superstore.

Floor detection in a parking garage: Did you park on floor 3 or floor 5? Or was it 2? Barometers with great accuracy can detect subtle changes in altitude and be part of a solution that lets you know where you parked when GPS is unavailable.

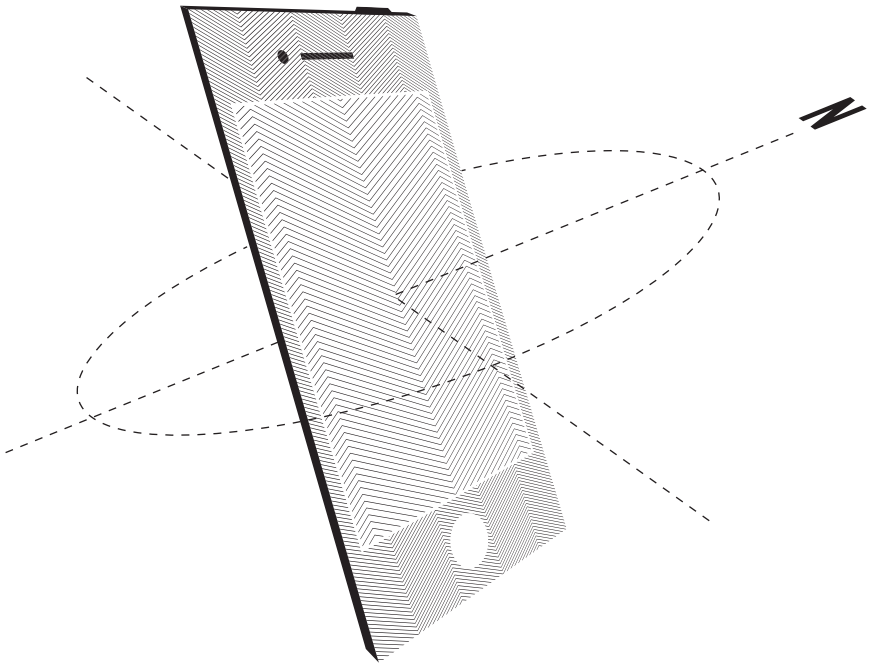
SPORTS

Ski passes charged by usage: Dynamically charging ski passes that measure the times you've gone up and down ski runs with a significant altitude change might be possible with a barometer measuring the changes in air pressure. Perhaps easier than relying on a battery draining GPS.

ENVIRONMENT

Magnetometer **m/s**

Measures Earth's magnetic field, typically in three directions, often as a compass.



PRIMARY USE

What direction am I facing?

CONSUMER ELECTRONICS

Digital compass: Yes, a compass can be used as a compass. Thank you Carl Friedrich Gauss (inventor of Magnetometer in 1833).

TRAVEL

Navigation for cars : Combined with GPS, and some smart interpretation algorithms, measuring the magnetic field can help you automatically know where you're heading West on the freeway and not East.

Smarter audio tours : Whether it's augmented reality or audio tour guides, magnetic forces can indicate that you're looking at a Picasso and not a Rembrandt at by using subtle cues in your directional information.

RETAIL

Magnetic indoor maps for shopping malls: Knowing that the Earth's magnetic field can be slightly different on every square foot—effected by materials like steel and concrete—provides enough uniqueness to create indoor magnetic maps. Using specialized magnetometers, researchers from the University of Oulu in Finland have been able to detect indoor location within 2 meters using magnetic maps. Pottery Barn is two doors down.

SECURITY

Gun detector: A magnetometer can use readings from an electromagnetic field to detect metal objects, like handguns.

MEDICAL

Cardiac Diagnostics: Our heart produces a small magnetic field, and some researchers believe that a special kind of magnetometer can detect heart conditions better than other methods. (If this piques your interest, The University of Leeds has done some of this work).

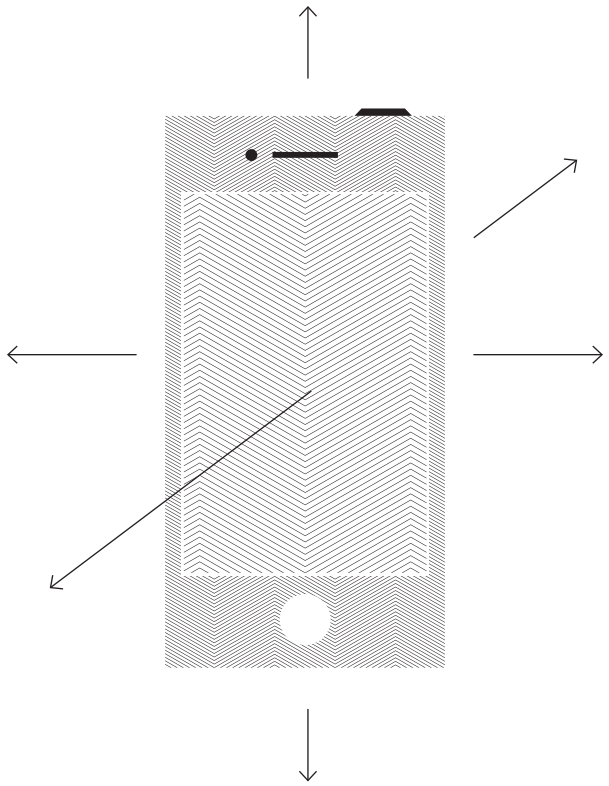
CONSTRUCTION

Rock detection: Some rocks are more magnetic than others, like iron and copper. That might help crews drilling into the Earth.

MOTION

Accelerometer m/s^2

An accelerometer is designed to measure non-gravitational acceleration.



PRIMARY USE

How fast am I going?

MEDICAL

Fall detection: Fallen and you can't get up? An accelerometer can provide the necessary data to determine accidental falls, a tool most commonly used with the elderly. And more accurately when using a multi-axis accelerometer, or when paired with a gyroscope.

Activity monitoring: Getting that daily run in? Getting enough steps? An accelerometer can track your fitness activities. Pair with a simple timer, store the information by date, and you'll have an automatic exercise log.

Sleep tracking: Measure your tossin' and turnin'. Pair with a gyroscope for more accuracy. Add a heart rate sensor and you've got even more useful data. Timestamp your sleep, and now you can even build an automatic sleep journal.

Sports impact injury detection: If a sudden force throws a football player 15mph in the opposite direction he was running, there's probably good reason to check on him and make sure he's okay.

AUTOMOTIVE

Traffic prevention: From an array of devices—a wearable, tablet, smartphone, or the car itself—users sharing how fast they're driving can help everyone avoid traffic jams. Start making a log, and the system might be able to predict traffic on a daily, weekly, and perhaps, annual basis.

Speed limit warning: Your car's speed combined with GPS location, and a map of speed limits can let you know if you're breaking speeding laws.

Driving mode: Don't touch that phone! Simple logic—if you're moving 50mph, you're probably not walking—can be leveraged to shut off texting, transition to voice commands, or stop you from doing other dangerous thinks like watching a movie on that 17" screen in your center console while you're on an expressway.

Accident likelihood: A sudden change in speed, like slamming on the brakes, could be a trigger used to lock seat belts or even deploy air bags.

Highway mode: If your car exceeds 50mph you're probably on a freeway. That might mean the music turns up a bit, the wipers don't let you accidentally spray the driver behind you, and the dials turn much more glanceable.

FINANCIAL

Gait Identification: A 2012 study in Saigon Technology University showed that it might be possible to identify individuals through their unique pattern of walking. This could be used as a passive, second factor identification when transferring money.

RETAIL

In store behavior: How quickly do customers who have your app move through aisles? What displays slow them down? Acceleration could help make better stores, knowing what kinds of things they shop for could allow you to surprise them with a gift of something they look at but don't buy.

Checkout speed: How quickly do customers who have your app move through the checkout aisle? A/B tests of different techniques could show you what works best for what kinds of customers.

HOME

Movement through rooms: Walking around? If you've got a wearable on, movement throughout the house could trigger lights or other devices, especially when paired with simple bluetooth connections.

CONSUMER ELECTRONICS

Drop protection: An accelerometer can lock down hard drives and other crucial components to protect them if your device is quickly traveling to the ground.

NONPROFIT

Cellphone avoidance: In 2014, UNICEF's sponsor Giorgio Armani offered to donate $10 towards clean drinking water for each smartphone user willing to forgo using her phone for 10 minutes. (Those users were also asked after 10 minutes if they would like to contribute as well).

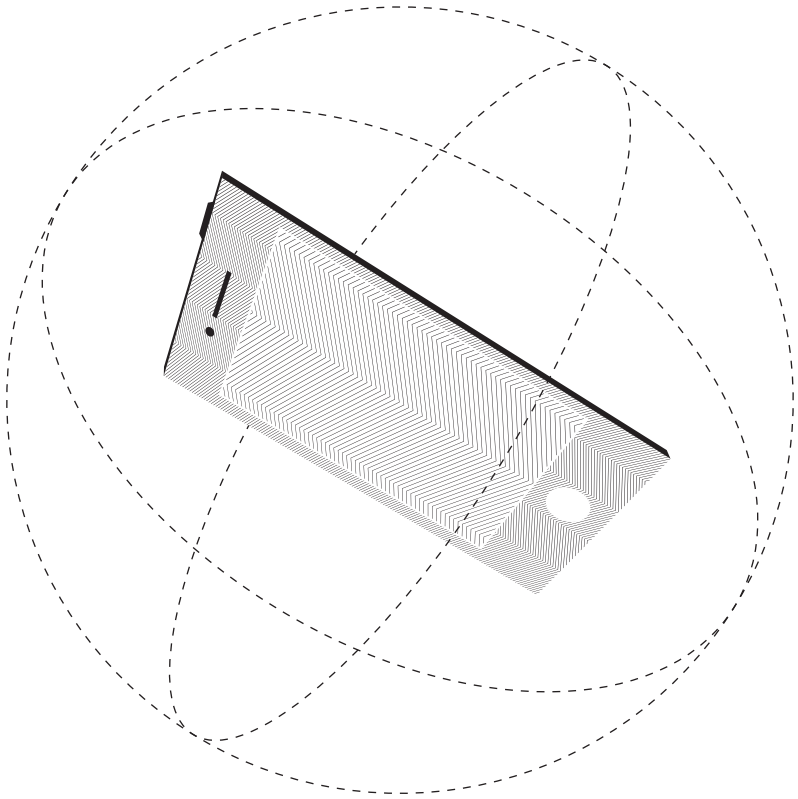
SPORTS

Running mode: No need to even hit start/stop on a sports watch when a sudden shift in acceleration shows you've started your daily jog. Combine with location, time of day, common jogging patterns and the system can gain more confidence if necessary that yes, you are indeed out for a neighborhood stroll.

MOTION

Gyroscope °/s

A gyroscope measures three dimensional rotation.



PRIMARY USE

How am I rotating?

MEDICAL

Prosthetic responsiveness: Feedback to the body on three-dimensional movement can help artificial limbs be more responsive.

Fall detection:
(See accelerometer).

Sleep Tracking:
(See accelerometer).

Guide tiny movements: Instrumental guidance from the gyroscope could let your doctor know many degrees he's turned that scalpel. Nano-sized optical gyroscopes developed in 2010 at Tel Aviv University can be used in medical technology to guide health care professionals with minute movements.

Physical therapy: Exercise balls with gyroscopes can provide challenges to help patients recover from rotation-based injuries like carpal tunnel.

CONSUMER ELECTRONICS

Camera-shake correction: A gyroscope can detect your shaky hand and remove that exact motion to create a better picture.

Panoramic photography: Gyroscopes can be great at measuring subtle direction changes, like when you're slowing spinning in a circle trying to capture the Grand Canyon in one shot.

Advanced controllers: By tracking rotational movements, physically angling a controller can be used to control things like flight simulator and car racing games.

AEROSPACE

Turn indicator: Gyroscopes are often employed to provide turning information to pilots, and helping them keep the plane steady afterwards.

Heading indicator: In certain situations, the gyroscope can be a better indicator for direction than a magnetic compass.

Attitude indicator: For those times when you're like, "Oh, whoops, this airplane is upside down."

NAVAL

Auto stabilization: Ship stabilizing gyroscopes are a technology developed in the 19th century and early 20th century and used to stabilize roll motions in ocean-going ships.

AUTOMOTIVE

Short-term navigation: When GPS signals are unavailable indoors or places like tunnels—also known as "dead reckoning"—a gyroscope is used in some cars to record turns in order to help drivers reach their destination.

SPORTS

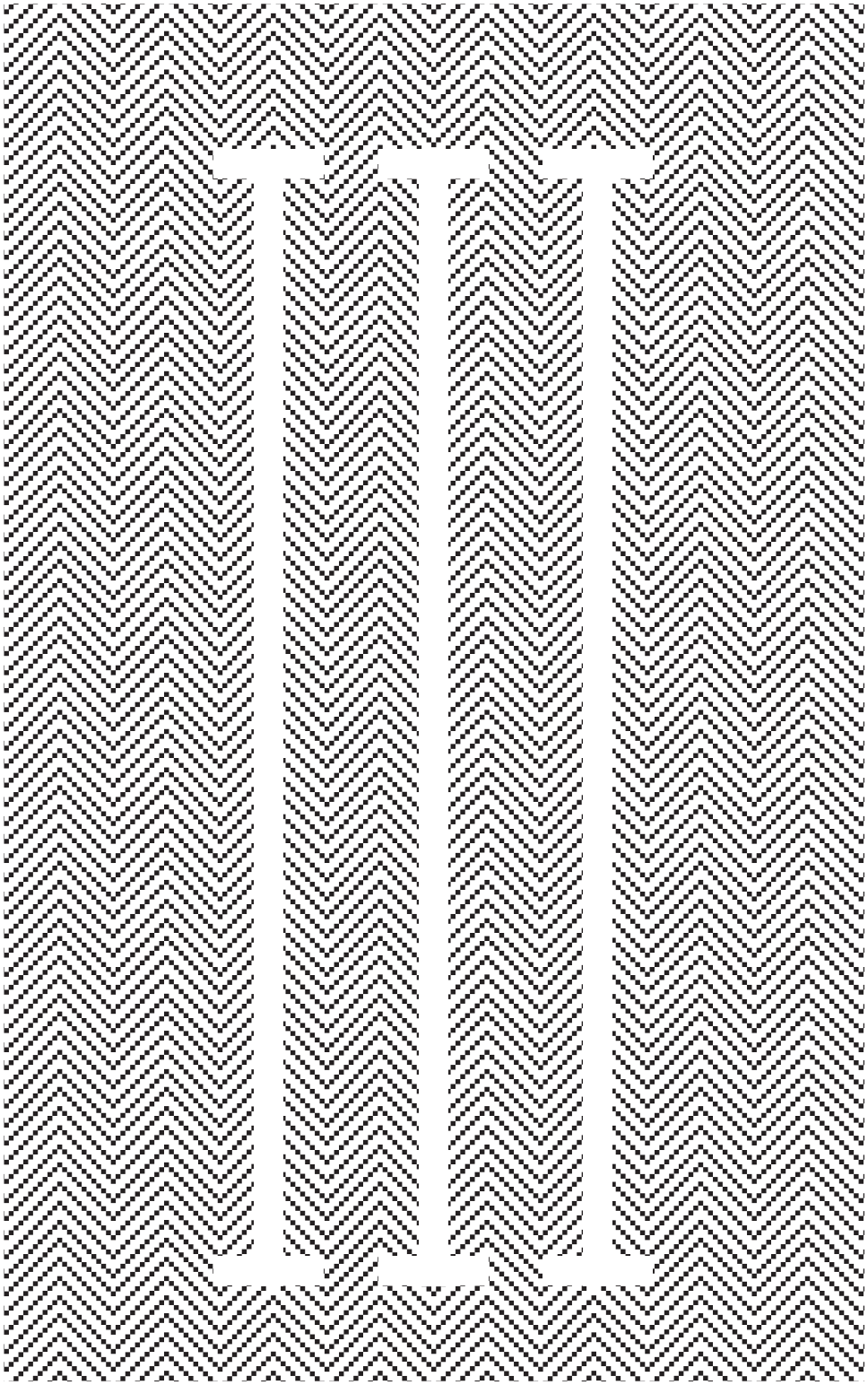
Golf swing guidance: Golf clubs with gyroscope attachments can guide golfers to that Tiger Woods swing. (Um, golf swing).

Baseball bat tracking: An embedded gyroscope in a baseball or softball bat can provide rich data about a swing. This way to hit it to left field, that way to hit a groundball.

Bowling ball spin: A gyroscope attached to the outside of a bowling ball is a bad idea. It won't roll down the lane. But on the inside, it could provide interesting data for a guide that helps you get to 300.

Tennis swing: A gyroscope can provide feedback to an algorithm that can help you improve the angles of your swing. Sony's 2014 Smart Tennis Sensor also used a vibration sensor to track where on the racket balls are hit, and an accelerometer to record how fast the racket was swung.

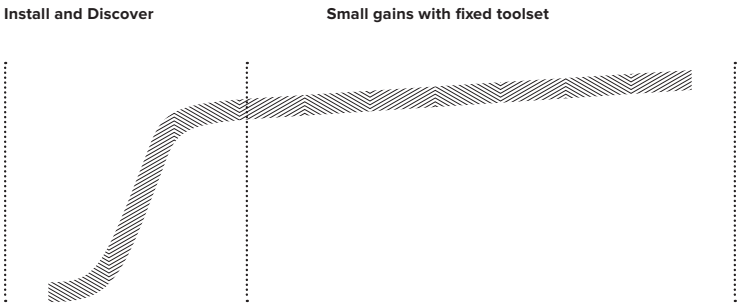
Hockey stick: If you've read what I wrote about baseball bats, golf clubs, and other sports, you don't need me to explain how gyroscopes can be used with hockey sticks.



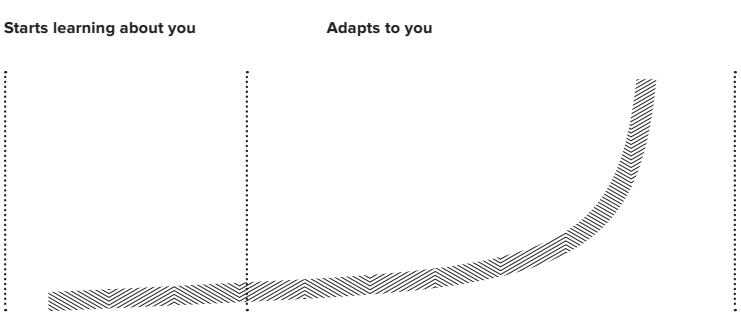
Principle Three: Adapt to Individuals

You’re spécial

Leaving behind pixel-based assets, screenless, #NoUI solutions can change over time. We can change the software experience from diminishing returns…



…to an adapting system with exponential gains over time.



One way to do this is by studying patterns. Some examples:

Work location: where someone tends to spend their time M-F 9am–5pm

How fast you walk: average speed when you’re moving under 6mph

How fast you drive: average speed when you’ve got your navigation app launched

We can use these patterns to create an ever-evolving experience to your needs, wants, and preferences.

Putting it all together

Simple example:

I. Typical Process (Observation)

Sometimes Ashley falls asleep on the train to work, and misses her train stop. She tends to have her smartphone in her pocket.

II. Machine Input (Radios, Sensors, etc.)

We have confidence that someone is on a train not via form fields, but rather when:

1. **Accelerometer = 75mph**
2. **GPS puts her on a train route**

III. Adapt to Individuals (Patterns)

Ashley tends to spend weekday hours of 9am–5pm near 123 First Street. We’ll have confidence that she’s near her workplace, and she’s on the train route that leads to that location, and the time of day is near the start of her workday.

IV. Magic Moment (Solution)

Ashley’s phone vibrates to wake her up just before her train stop on the way to work.

THANK YOU!

I would love to hear your feedback, sucesses, and failures. Contact me anytime at goldenkrishna@gmail.com

The Best Interface Is No Interface | Golden Krishna
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