物联网工程学院
School of IoT Engineering

ParkingMoney

停车场道闸控制系统

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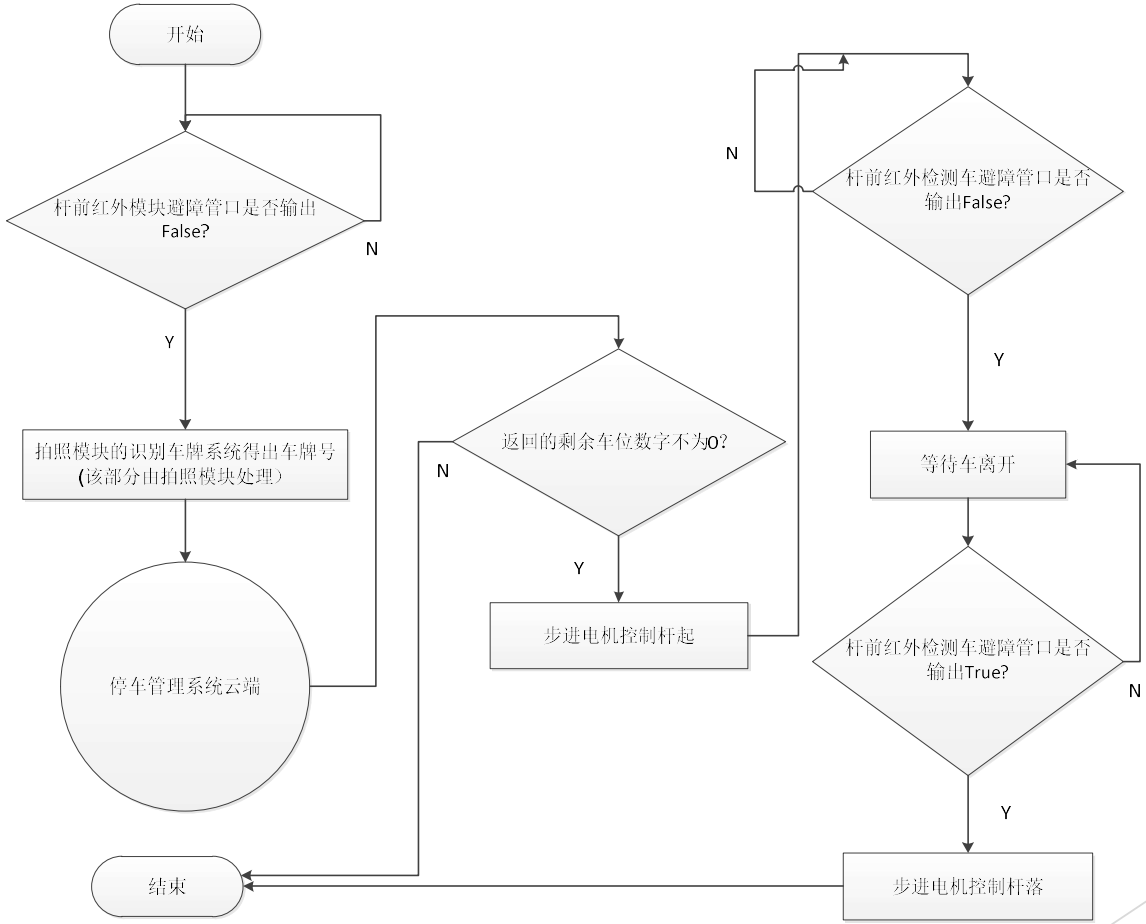
车牌识别算法—HyperLPR

纪港

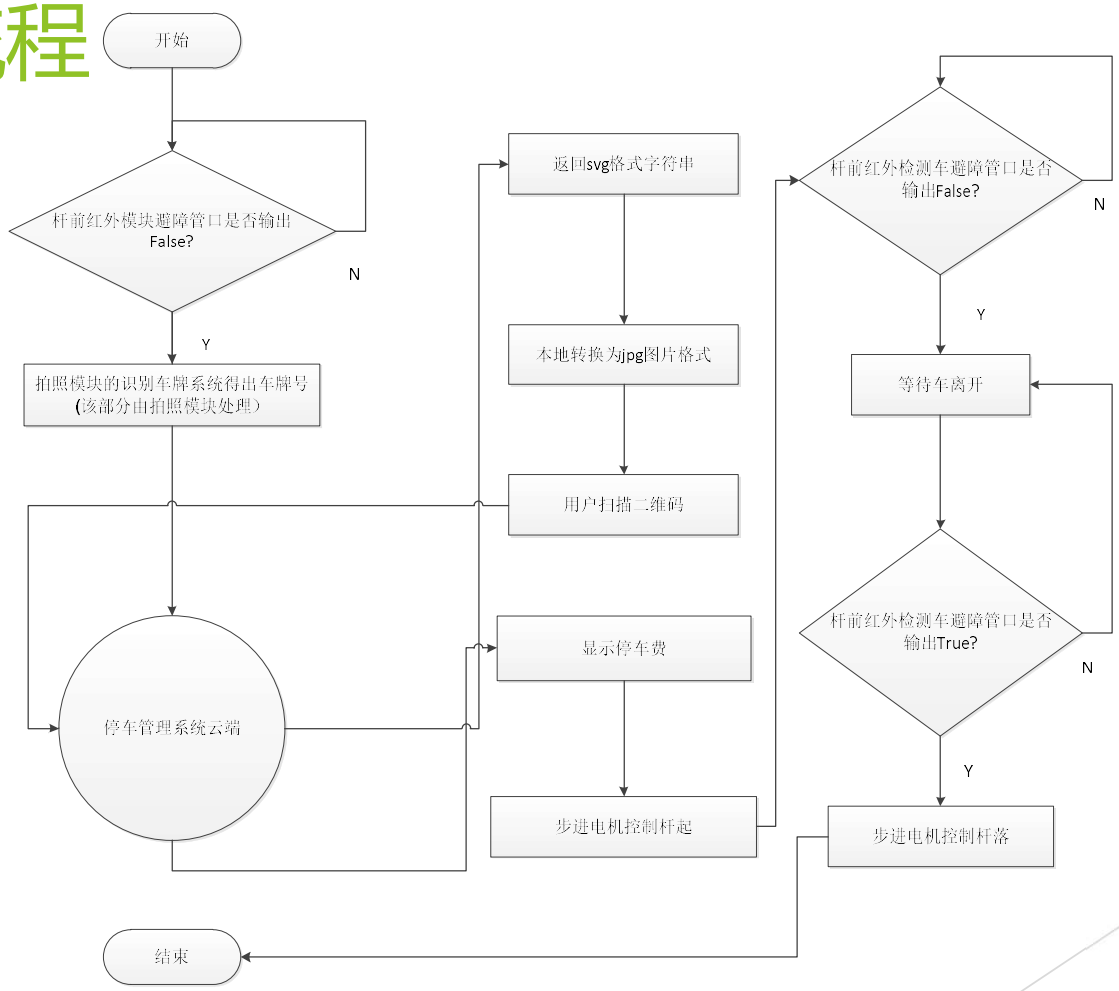
车牌识别流程

- step1.使用opencv的HAAR Cascade检测车牌大致位置
- step2.Extend检测到的大致位置的矩形区域
- step3.使用类似于MSER的方式的多级二值化+RANSAC拟合车牌的上下边界
- step4.使用CNN Regression回归车牌左右边界
- step5.使用基于纹理场的算法进行车牌校正倾斜
- step6.使用CNN滑动窗切割字符
- step7.使用CNN识别字符

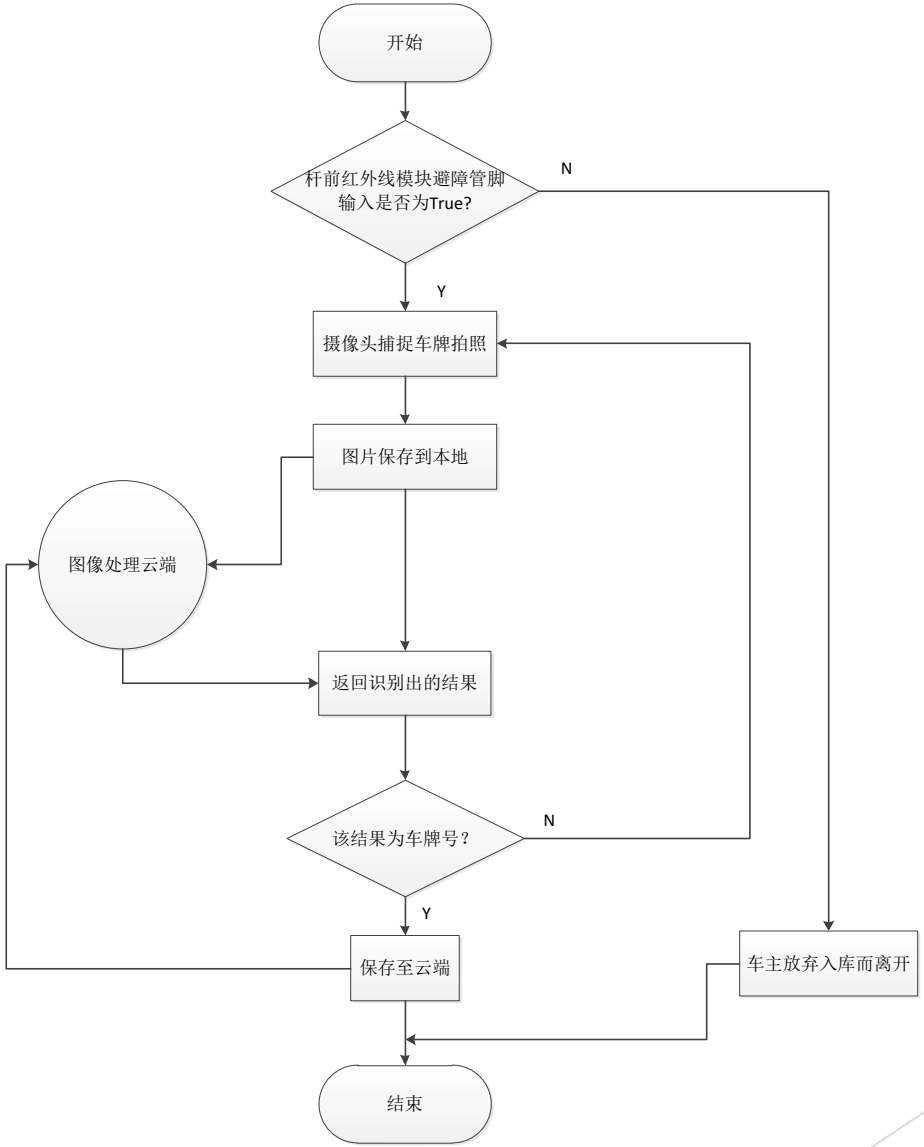
车辆入库流程


开始
杆前红外模块避障管口是否输出False?
N
Y
拍照模块的识别车牌系统得出车牌号(该部分由拍照模块处理)
停车管理系统云端
返回的剩余车位数字不为0?
N
Y
步进电机控制杆起
N
杆前红外检测车避障管口是否输出False?
Y
等待车离开
杆前红外检测车避障管口是否输出True?
N
Y
步进电机控制杆落
结束

车辆出库流程


开始
杆前红外模块避障管口是否输出False?
N
Y
拍照模块的识别车牌系统得出车牌号(该部分由拍照模块处理)
返回svg格式字符串
本地转换为jpg图片格式
用户扫描二维码
停车管理系统云端
显示停车费
步进电机控制杆起
杆前红外检测车避障管口是否输出False?
N
Y
等待车离开
杆前红外检测车避障管口是否输出True?
N
Y
步进电机控制杆落
结束

拍照模块


开始
杆前红外线模块避障管脚输入是否为True?
N
Y
摄像头捕捉车牌拍照
图片保存到本地
图像处理云端
返回识别出的结果
该结果为车牌号？
N
Y
保存至云端
车主放弃入库而离开
结束

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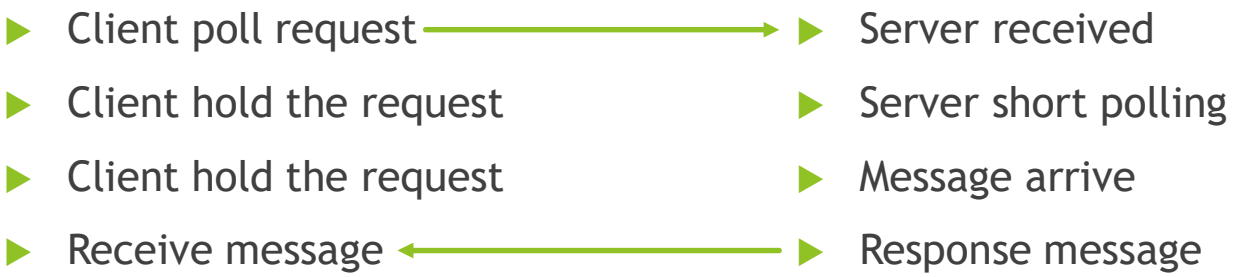
云端架构

尹达恒

Long Polling

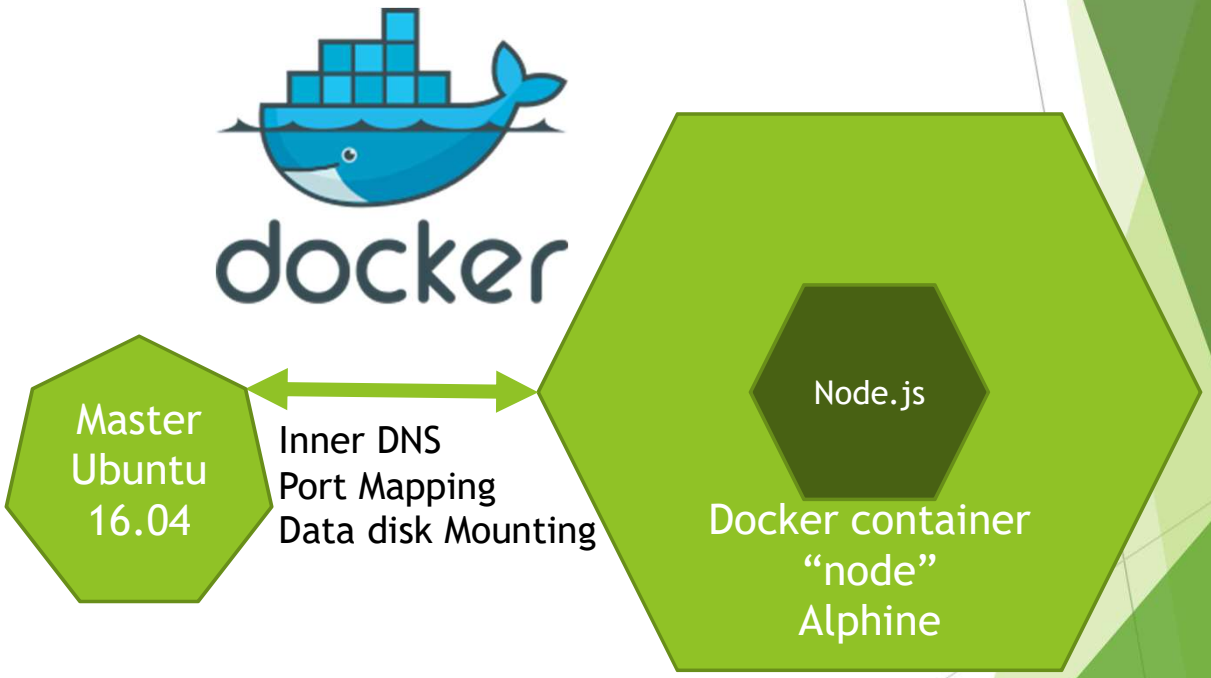


App Backend —— Node.js

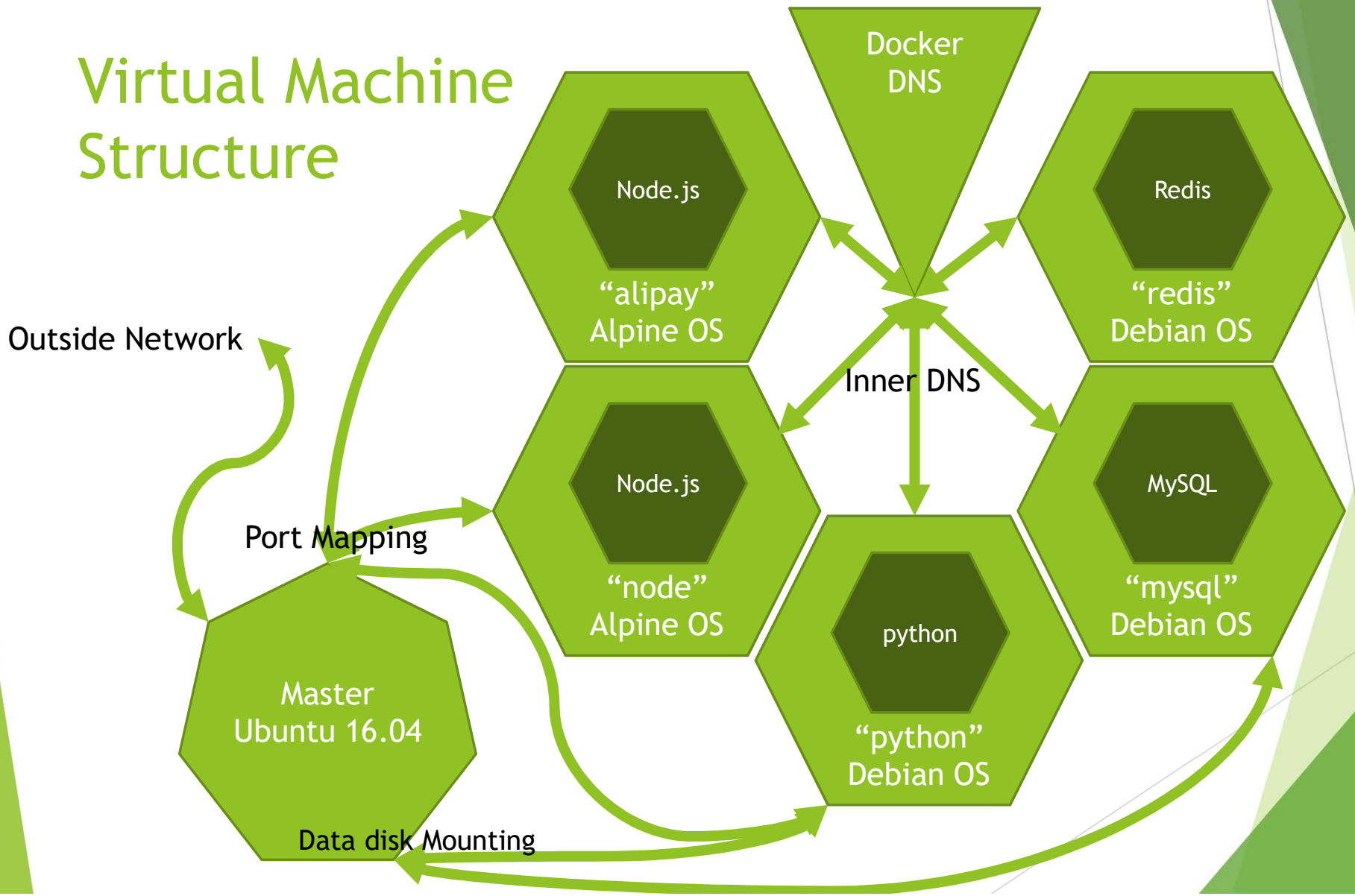
- Node.js is a high performance network application framework, well optimized for high concurrent environments.
- Node.js uses an event-driven, non-blocking I/O model, which makes it lightweight.
- Everything inside Node.js runs in a single-thread.

Docker
Build, Ship, and Run Any App, Anywhere

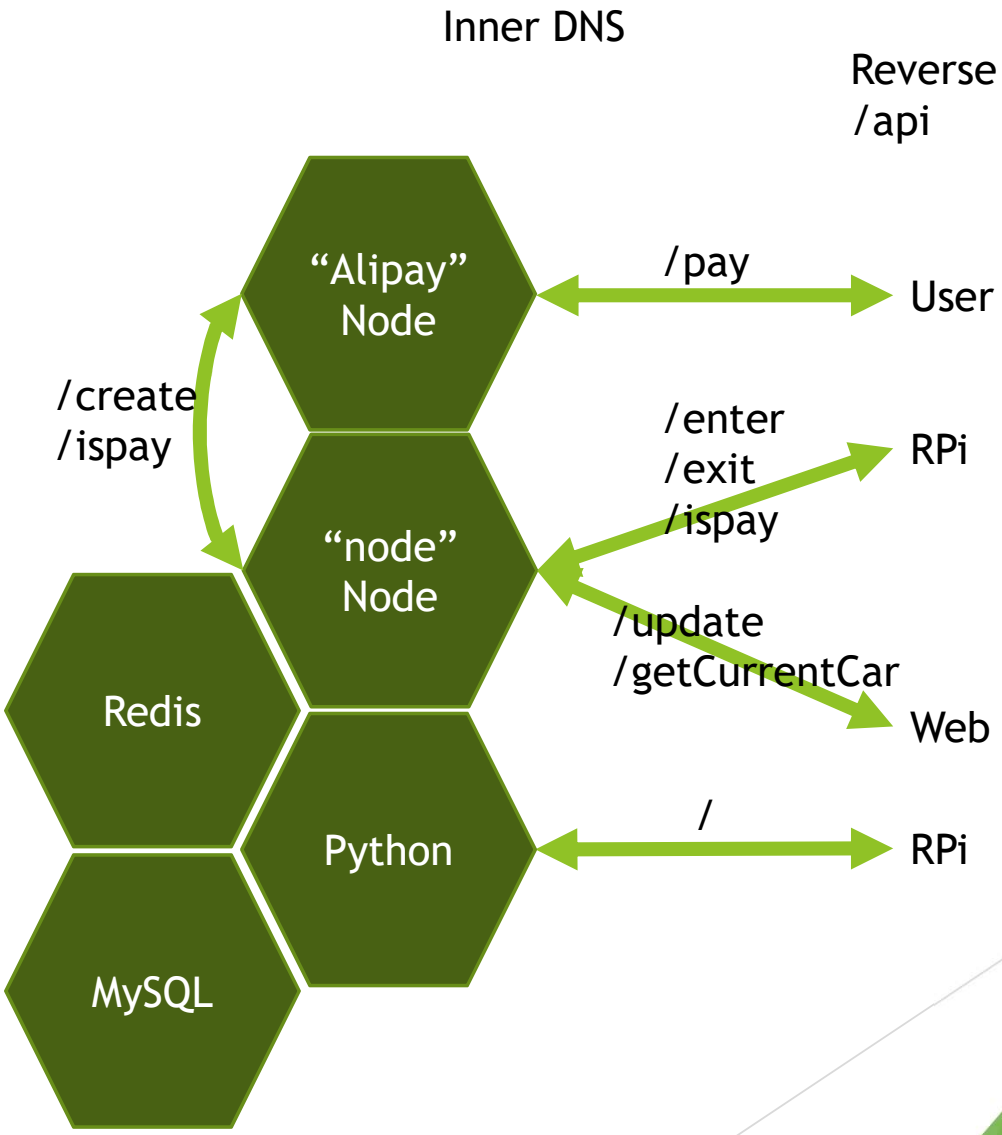
- Combined Microservice
- Alpine
- Image, Container, Swarm



Virtual Machine Structure



Application Structure



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数据流

尹达恒

Into the Office
-Web pages

- Add an Field
- Create an Experiment
- Add the Field to the Experiment
- Create QR code →
- ← Review the uploaded data
- Replay the audio or Edit/Delete data

Onto the Field
-Android app

- Scan the QR code
- Select the Experiment
- Input data or Record a piece of audio
- Replay the audio or Save/Upload data

Thank you!

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