Independent Feeding Device

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INDEPENDENT FEEDING DEVICE (IFD)

Jon Dekar, Hariharan Ananthanarayanan

MARKET

TARGET MARKET
- Nursing homes
- Assisted living facilities
- Home care

USER PROFILE
- Individuals with upper extremity disorders.
- Ability to chew and swallow
- Cognitive ability to operate a simple machine.

US MARKET SIZE
- 1,500,000 + potential users

TRANSFER ROBOT

- Six degrees of freedom for complete dexterity.
- Robot arm configuration designed to accommodate various tasks (scooping, collecting food).
- Arm links designed to encompass all four bowls.
- Dynamixel / Maxon motors for joint actuation.
  - High torque with small profile
  - PID control enabled
  - 12 bit encoder for accurate position control.
  - Velocity and acceleration control for smoother path profile.
- Hybrid path profiling using teach and play and inverse kinematics.
- Customizable point of delivery (POD).
- Dynamic trajectory generation through delivery sequence to POD.

FUTURE ENHANCEMENTS

- RFID for multiple user supervision.
- 3D sensing & load cells for monitoring nutritional consumption.
- 3D sensing to locate the user’s face.
- 3D sensing to interpret user commands.
- 3D sensing for collision detection.
- 3D sensing for improved food capture and delivery.
- Dual utensils for sophisticated food capture.
- Additional utensil degrees of freedom.
- Dual Transfer Robot arms.

PRODUCT FEATURES

- Patented.

USER BENEFITS
- Improved confidence, dignity and independence.
- Greater social interaction.
- Increased desire to eat and drink.
- Improved health through better nutrition.
- Ability to control food selection and pace of eating and drinking.

CAREGIVER BENEFITS
- Upgrades job responsibilities.
- Improves productivity.
- Reduces time pressure and stress of feeding a resident.

RESIDENCY BENEFITS
- Reduces malnutrition and dehydration lawsuits.
- Increases productivity and reduces labor costs.
- Improves monitoring of daily nutritional consumption.
- Improves preventive care.
- Reduces caregiver job turnover.
- Improves reputation

VALUE

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DESIGN

- Inconspicuous & stylish.
- Intuitive & easy to use.
- Customizable by user.
- Similarity to conventional dining.
- Superior functionality.
- Custom Interfaces.

Table with IFD users

Supervisor

Improving lives, changing healthcare.