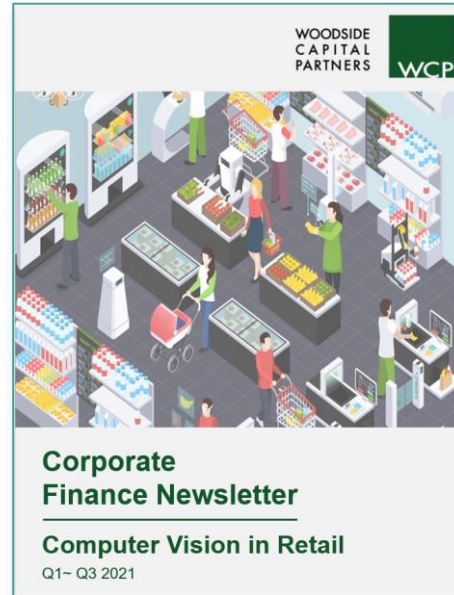




Big Trends in Computer Vision for 2022: Health and Safety, Retail and Consumer Electronics

Dr. Rudy Burger
Managing Partner
Woodside Capital Partners

Woodside Capital Partners Overview



WOODSIDE
CAPITAL
PARTNERS



- M&A + corporate finance advisory – dedicated imaging & computer vision practice
- Focused on emerging growth technology companies
- Founded in 2001: over \$10 billion in transaction value
- Silicon Valley, New York, London, Zurich, Shanghai

Embedded Vision Market Map



Systems & Solutions

A grid of 11 icons representing different industry sectors. The icons are arranged in three rows. The first row contains five icons: Agriculture, Communications & Networking, Consumer & Mobile, Defense & Aerospace, and Healthcare. The second row contains five icons: Industrial, Media & Entertainment, Office Automation, Retail, and Security & Surveillance. The third row contains one icon: Transportation. The icons for Consumer & Mobile, Healthcare, and Retail are highlighted with a red dashed border.

- Agriculture
- Communications & Networking
- Consumer & Mobile
- Defense & Aerospace
- Healthcare
- Industrial
- Media & Entertainment
- Office Automation
- Retail
- Security & Surveillance
- Transportation



WOODSIDE
CAPITAL
PARTNERS



Enabling Technologies

A grid of three icons representing enabling technologies. The icons are arranged in a single row. The first icon is a microchip, labeled "Components". The second icon is a wrench and hammer, labeled "Enabling Services and Tools". The third icon is a circuit board, labeled "Subsystems".

- Components
- Enabling Services and Tools
- Subsystems

<https://www.edge-ai-vision.com/resources/industrymap/>

Computer Vision in Retail

Instacart Introduces Caper Counter



Caper Counter checkout system provides fast, contact-free transactions of food and beverage selection for fans through visual recognition and artificial intelligence technology, helping to reduce transaction times (4/21/2022).

Computer Vision in Retail Application Taxonomy



Foot Traffic
Heat Maps

Zero
Checkout

Shelf
Inventory
Management

Virtual Mirrors

Customer
Identification

Security &
Loss
Prevention

Robotic
Customer
Assistance

Computer Vision in Retail Market Map



Enabling Computer Vision Technologies



Online Personalization

At Home Virtual Try On & Customization



Warehouse Fulfillment & Automation

Last Mile Autonomous Delivery



Robotic Warehouse Inventory & Picking



Retail Automation

Foot Traffic / Layout



In-Store Robotic Customer Assistance



In-Store Virtual Try-On & Customization



Security, Safety, Staff, Compliance Management



Self or Zero Checkout



Shelf Inventory Management

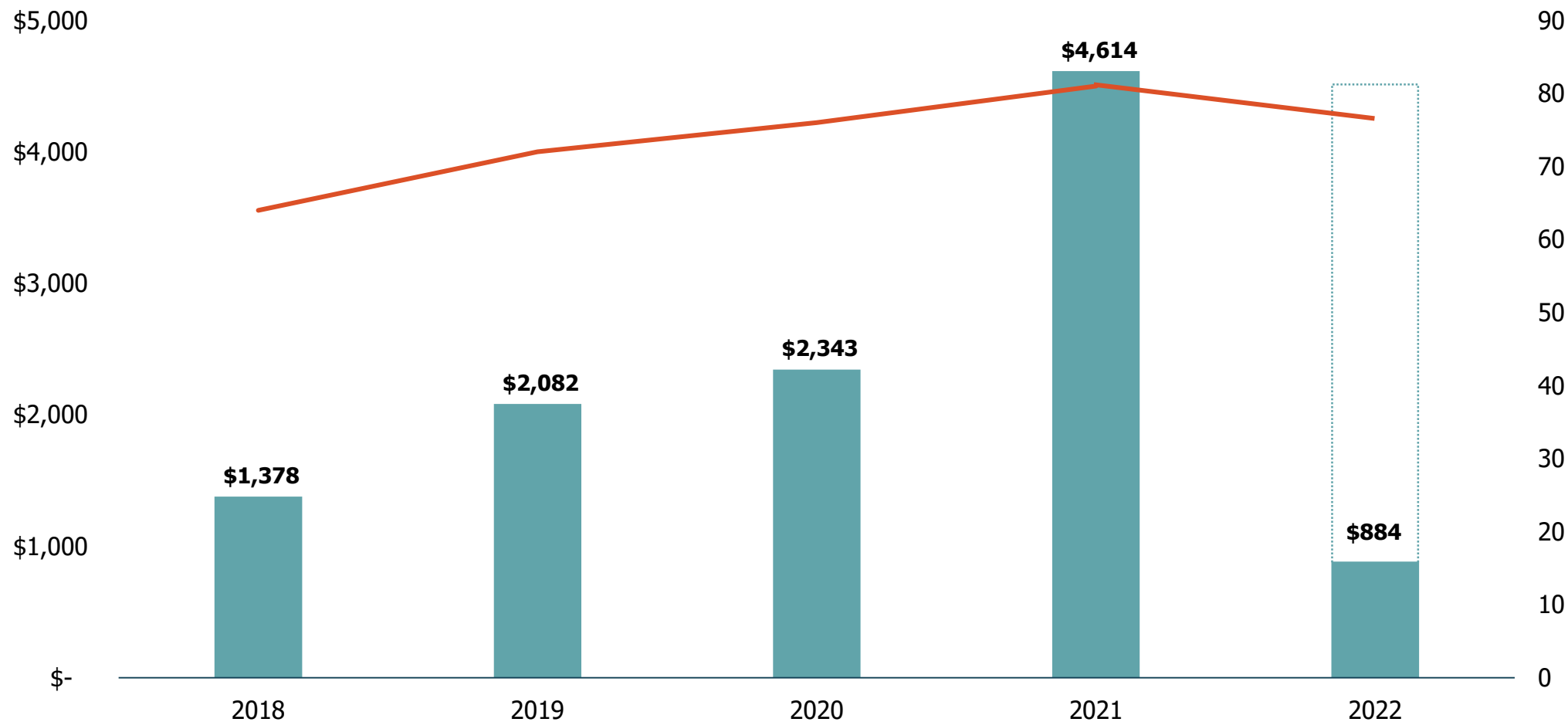


Notable Computer Vision in Retail Companies



The Amazon logo, consisting of the word 'amazon' in a lowercase, sans-serif font with a curved arrow underneath it.	Amazon has created and manages Amazon Go - a chain of cashier-less convenience stores in the US & UK
The Trax logo, with 'trax' in a lowercase, bold, sans-serif font where the 'x' is yellow and the rest is purple.	Trax's image recognition platform turns retail shelf images into real-time actionable insights for consumer goods companies
The Zebra logo, featuring a stylized zebra head icon to the left of the word 'ZEBRA' in a bold, uppercase, sans-serif font.	Zebra is a leading provider of automatic identification and data capture technology to retailers.
The Grabango logo, with 'grabango' in a lowercase, sans-serif font where 'grab' is red and 'ango' is black.	Grabango's solution uses computer vision to identify items as they are picked up, counts those items and sends the receipt to the shopper's phone after they leave the store.
The STANDARD logo, with 'STANDARD' in a bold, uppercase, sans-serif font.	Developer of autonomous checkout technology. The company uses computer vision to let consumers shop and pay without scanning items or stopping to pay.
The Scandit logo, with 'SCANDIT' in a bold, uppercase, sans-serif font.	Scandit's platform is built on computer vision in smartphones to capture data from barcodes, text, IDs, and objects, enabling users to have cost-effective retail automation.
The Caper logo, with 'Caper' in a lowercase, cursive script font.	Contactless and automated checkout powered by AI and computer vision
The ZipPin logo, with 'ZIPPIN' in a bold, uppercase, sans-serif font where the letters are outlined in red.	Checkout-free technology enabling retailers to deploy frictionless shopping in their stores.

Computer Vision in Retail - Venture Investments (\$M)



■ Total Invested — # Deals

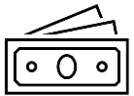
© 2022 Woodside Capital Partners



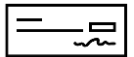
Retailers are being driven to automate their stores to compete with Amazon; Covid-19 has accelerated this push.



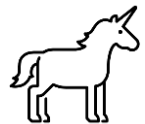
Financing deal value for retail technology companies more than doubled between 2018 - 2019, increasing from \$733M to \$2.3B per year.



Growth has been driven by cashier less checkout, inventory management, warehouse automation & fulfillment, and personalization technologies.



Notable recent private placements include Trax (Series E, \$642M), Scandit (Series D, \$150M)



Standard Cognition achieved unicorn status after a \$150M round led by Softbank.

Computer Vision in Health & Safety

Computer Vision in Health & Safety Taxonomy



Diagnostic
Imaging

Remote
Patient
Monitoring

Surgical
Training &
Assistance

Drug
Discovery &
Development

Telemedicine

Personalized
Medicine

PPE
Compliance

Mental &
Physical
Health

Computer Vision in Diagnostic Imaging



AR/VR



Blood / Fluids



Cardiology



Oncology



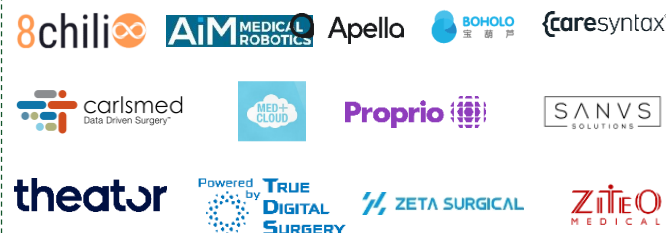
Radiology



Rem Monitoring



Surgery



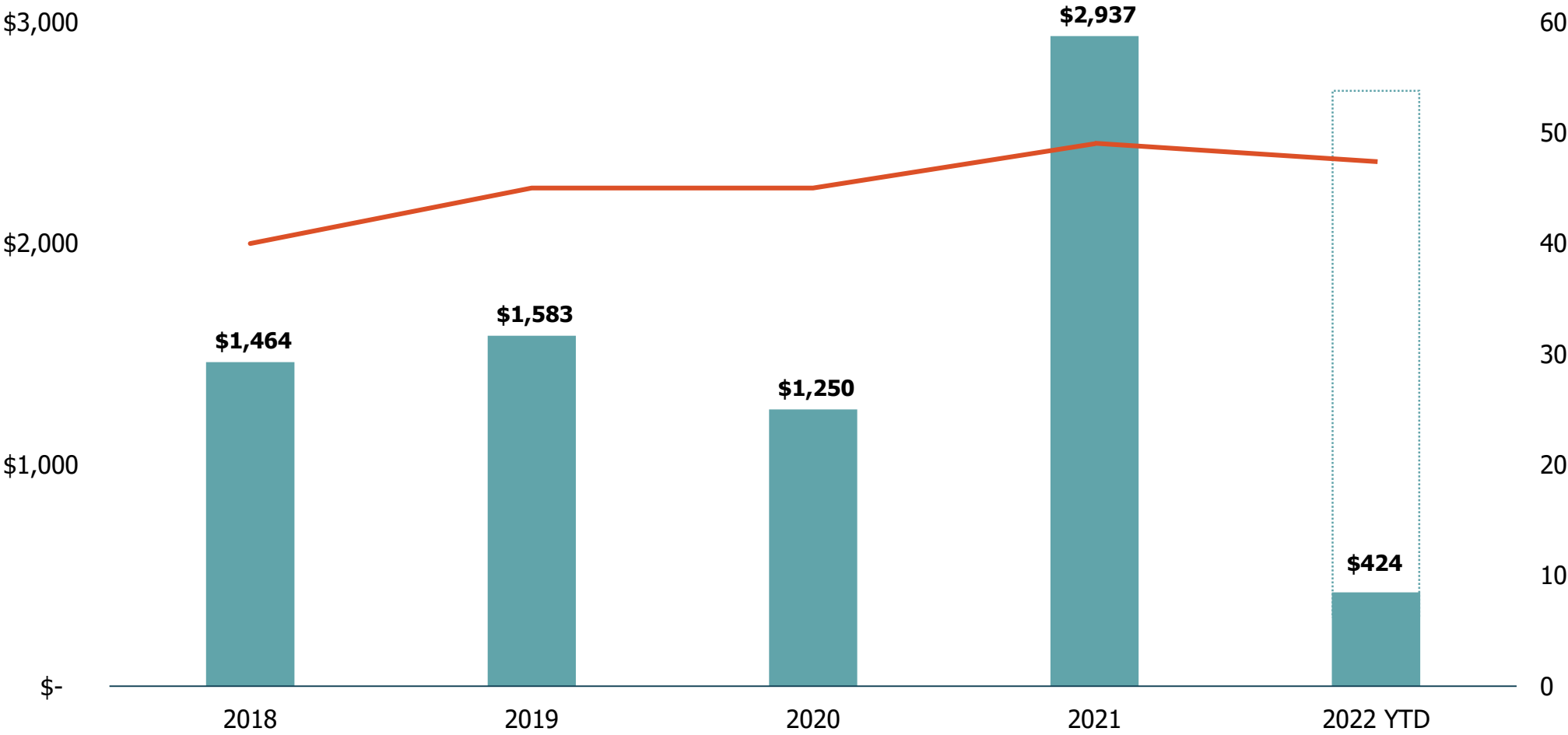
Vision



Other










Computer Vision in Healthcare - Venture Investments (\$M)



Notable Private Computer Vision in Healthcare



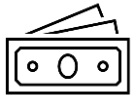
	<p>Technology that enables people who are blind or visually impaired to read text, recognize faces, identify products</p>
	<p>Automated microscopy device for diagnosing blood diseases using digital fluorescent microscopy and computer vision algorithms</p>
	<p>The smartphone camera, transformed into a medical device for at-home urinalysis and digitized wound care services</p>
	<p>Computer vision to help prevent falls in hospitals and elder care facilities</p>
	<p>Computer vision analysis of medical images to screen for early signs of chronic disease in large populations.</p>
	<p>Computer vision for medical imaging to save patient lives by making accurate medical image interpretation universally available and affordable</p>
	<p>Computer Vision to provide analysis of cardiac MRI images</p>



Computer vision is already being applied in a wide variety of healthcare applications to improve outcomes including surgical training, cardiology, radiology, remote patient monitoring, dentistry, and surgery



Google Research has recently demonstrated self-supervised learning to train deep learning models for medical imaging.



The computer vision in healthcare market is projected to reach \$1.46 billion by 2023 from \$210 million in 2018, representing a CAGR of 47.2%! The medical imaging & diagnostics segment is expected to grow at the highest CAGR.



Computer vision has already been shown to provide faster and more accurate diagnosis of medical images than professional radiographers



Market challenges include reluctance of medical practitioners to adopt cutting-edge technologies, + lack of awareness and technical knowledge PLUS rising security (HIPAA) concerns related to processing and analytics, lack of curated data.

Computer Vision in Consumer Electronics

Computer Vision Applications in Consumer Electronics



Device Unlock
via Face
Recognition

A simple line-art icon of a smartphone, positioned to the left of the text.


Intelligent home
security
cameras

A line-art icon of a security camera mounted on a wall, positioned to the left of the text.

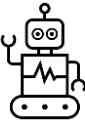
AR/VR headsets

A line-art icon of a VR headset, positioned below the text.

Drones

A line-art icon of a quadcopter drone, positioned below the text.

Consumer
Robots

A line-art icon of a small, boxy robot with a head, positioned to the left of the text.

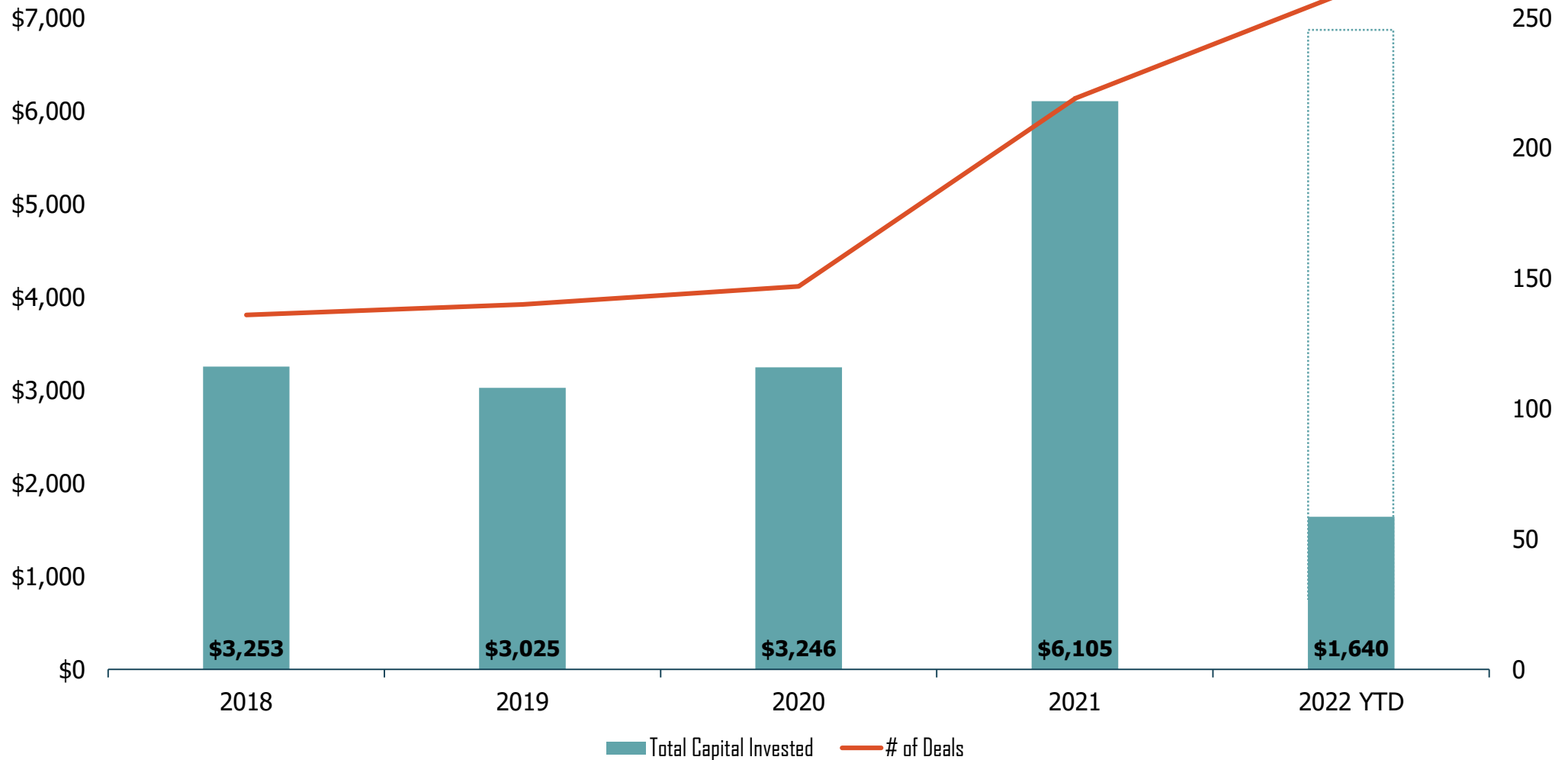
Kitchen
Appliances

A line-art icon of a kitchen appliance, possibly a washing machine or dryer, positioned to the left of the text.

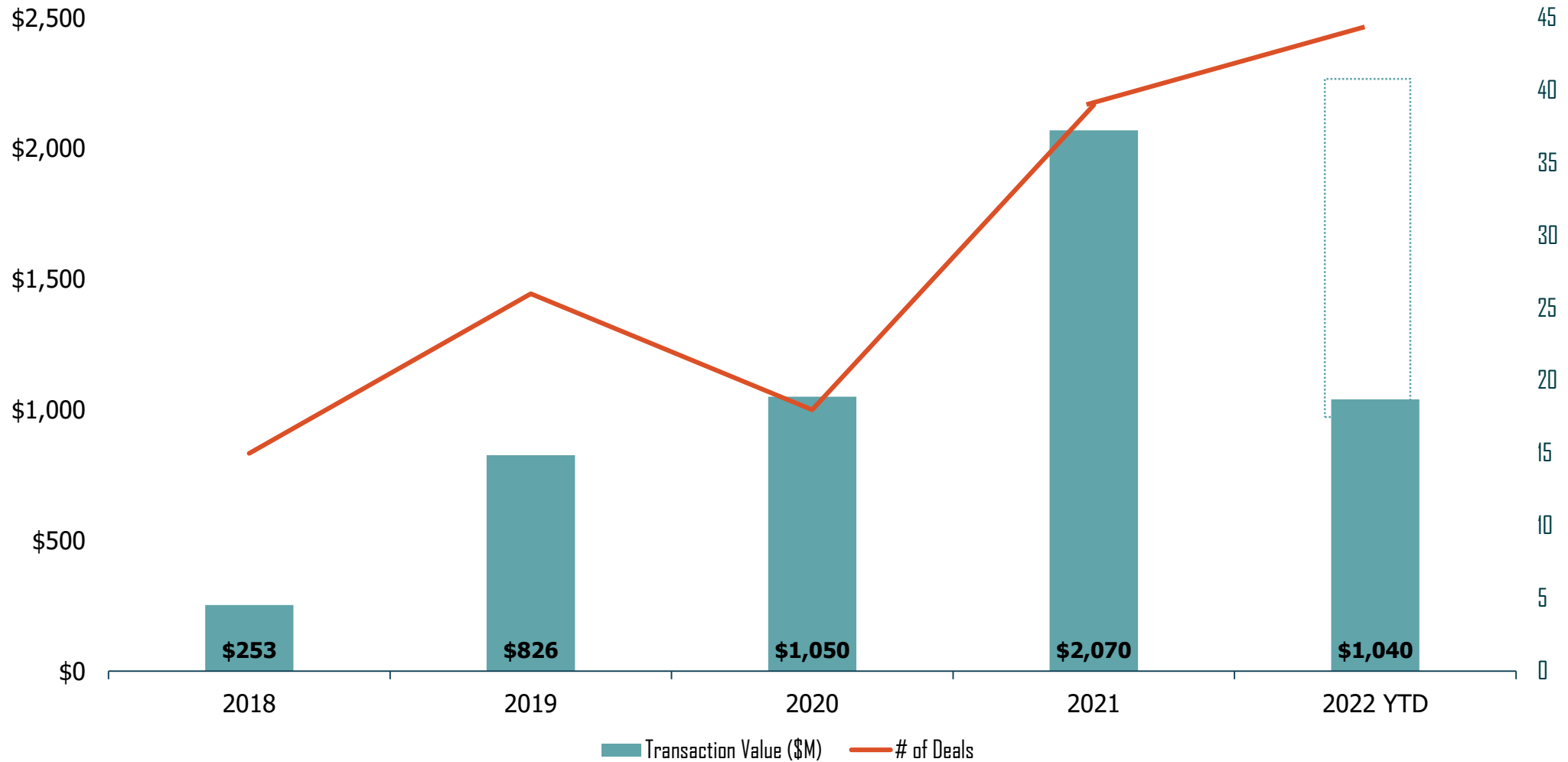
Home
Exercise

A line-art icon of a piece of home exercise equipment, possibly a stationary bike or elliptical, positioned to the left of the text.

Computer Vision – Global Venture Investments (\$M)



Computer Vision – Global M&A (\$M)





- New SWIR sensors are creating consumer market opportunities for under display 3D imaging, depth sensing and ADAS
- Consumer privacy is a rising concern for computer vision. US lags Europe in this regard
- New technologies promise to replace ToF for mobile phone Facial recognition at a lower cost and under OLED display
- Meta, Apple and others believe that hi-tech eye-glasses are the next mass market computing platform
- The “gamification” of exercise at home via computer vision and VR is becoming big business
- “Killer APP” for mobile phone front side depth imaging has not yet emerged
- Computer vision needs to move beyond deep learning to unlock the next stage in autonomy

Resources



<https://my.pitchbook.com>

<https://www.marketsandmarkets.com/>

<https://www.tracxn.com>

<http://www.yole.fr/>

Disclaimer



The Information and opinions in this presentation have been prepared by Woodside Capital Partners International, LLC, and its affiliate, Woodside Capital Securities, LLC (collectively, "Woodside"). All information supplied or obtained from this report is for informational purposes only and should not be considered investment advice or guidance, an offer of or a solicitation of an offer to buy or sell a security, or a recommendation or an endorsement by Woodside Capital Securities, LLC, Woodside Capital Partners International, LLC and Woodside Capital Partners UK, LLP of any security. Further information on any of the securities mentioned in this report may be obtained from our offices. Other than disclosures relating to Woodside Capital Securities, LLC the information herein is based on sources we believe to be reliable but is not guaranteed by us and does not purport to be a complete statement or summary of the available data. Any opinions expressed herein are statements of our judgment on this date and are subject to change without notice. Periodic updates may be provided on companies/industries based on company specific developments or announcements, market conditions or any other publicly available information.

Important Disclosures:

Woodside Capital Securities, LLC is not a market maker in any securities mentioned in this presentation.

Woodside Capital Securities, LLC and their officers and employees may from time to time acquire, hold, or sell a position in the securities mentioned in this presentation. Woodside Capital Securities, LLC compensates individuals for activities and services intended to benefit the firm's investor clients. Compensation determinations for individuals, including the author(s) of this presentation, are based on a variety of factors, and may include the overall profitability of the firm and the revenues derived from all sources, including revenues from investment banking.

Woodside Capital Securities, LLC is a registered broker-dealer and member of FINRA (www.finra.org) and SIPC (www.sipc.org).

Woodside Capital Securities, LLC is an affiliate of Woodside Capital Partners International, LLC and Woodside Capital Partners UK, LLP.

One or more private companies in this presentation have confidentially retained Woodside Capital Securities, LLC, Woodside Capital Partners International, LLC or Woodside Capital Partners UK, LLP as an advisor. In addition, in the future Woodside may seek to offer investment banking services to, and collect fees from, any of the companies featured in this presentation.

Third Party Disclosures:

Any analyst opinions, ratings, and public company presentations included in this presentation are provided by third-parties unaffiliated with Woodside Capital Securities, LLC, Woodside Capital Partners International, LLC and Woodside Capital Partners UK, LLP. Woodside Capital Securities, LLC, Woodside Capital Partners International, LLC and Woodside Capital Partners UK, LLP makes no guarantees that information supplied is accurate, complete, updated or timely, and does not provide any warranties regarding results obtained from its use.

Thank You!

Rudy.Burger@woodsidecap.com

WOODSIDE
CAPITAL
PARTNERS

