

# Relazione scientifica

## CAPITOLO 1 PROBLEMA STUDIATO

Nell'ambito della programmazione disciplinare della nostra classe ( 1ALIC) è stata svolta l' Unità di Apprendimento denominata FLL: Seniors solutions in cui sono state coinvolte le materie Italiano, Inglese e Informatica. Durante le ore di Italiano abbiamo svolto una ricerca sulle seguenti tematiche:

1. La definizione dell'anziano.
2. La percentuale della popolazione anziana in Italia.
3. Le malattie croniche dell'anziano.

Durante le ore di Informatica abbiamo montato i pezzi del campo di gioco, imparato a programmare i robot della Lego e ci siamo allenati per compiere le missioni. Con l'insegnante di Lingue invece abbiamo appreso i termini delle malattie degli anziani in Inglese. Gli insegnanti coinvolti nel progetto ci hanno stimolato a riflettere sulla vita degli anziani, sui loro problemi e sulle potenzialità della Robotica .

## CAPITOLO 2 FONTI DI INFORMAZIONE

Le fonti utilizzate per svolgere la nostra ricerca sono state:

[www.paginemediche.it](http://www.paginemediche.it)

[it.wikipedia.org](http://it.wikipedia.org)

<http://www.firstlegoleague.org/challenge/2012seniorsolutions>

[www.wordreference.com](http://www.wordreference.com)

[www.macmillandictionary.com](http://www.macmillandictionary.com) (per pronuncia e trascrizione fonetica)

## CAPITOLO 3 ANALISI DEL PROBLEMA E PROPOSTE DI SOLUZIONE

La ricerca ci ha portato a definire le seguenti parole:

1. **Anziano**: definiamo con la parola anziano chi ha raggiunto un età prossima al termine della vita.
2. Secondo gli ultimi dati Censis nel 2020 gli anziani saranno il 20% della popolazione italiana. Nell'ultimo ventennio si è registrato un progressivo incremento dell'età media : gli ultrasessantenni sono aumentati del 6% fino ad arrivare al 20%. Negli ultimi 10 anni invece, la percentuale di persone non autosufficienti è scesa tra chi ha meno di 75 anni, dal 22% al 19%.

3.

- **Alzheimer** : è una malattia che colpisce la memoria, questa è causata dalla perdita di cellule nervose.  
I sintomi sono di diverso tipo, come : la perdita di memoria e il disorientamento.
- **Osteoporosi**: è una malattia che colpisce maggiormente le donne, a causa della minor quantità di calcio nelle ossa provocata dalla menopausa.  
Si ha un maggior rischio di fratture che possono portare alla disabilità .
- **Diabete**: è una malattia cronica pancreatica che altera la quantità di glucosio nel sangue. Questa bisogna tenerla sotto controllo perché può causare degli infarti o svenimenti. Provoca una frequente necessità di urinare.
- **Artrosi**: Processo degenerativo ad andamento cronico che può interessare tutte le articolazioni del corpo con possibili esiti altamente invalidanti. Colpisce soprattutto le articolazioni legate al peso corporeo.
- **Ipertensione**: è una malattia in cui la pressione del sangue nelle arterie della circolazione sistemica risulta elevata.
- **Tiroidite**: è un'infiammazione della tiroide. può produrre una quantità eccessiva di ormoni (ipertiroidismo), facendo sì che il corpo usi energia più velocemente del normale, o troppo poca (ipotiroidismo), facendo usare l'energia più lentamente
- **Asma**: è una malattia ai bronchi che provoca un restringimento dei polmoni. Questa porta una faticosa respirazione causando delle difficoltà nei movimenti quotidiani.

La classe divisa per gruppi ha analizzato , tradotto e compreso i seguenti termini espressi in lingua inglese:

GRUPPO 1	
aging, ageing	The process of growing older, becoming old, changing with the passage of time.
Alzheimer's disease	Alzheimer's disease attacks the brain; it is not a normal part of aging. People with Alzheimer's disease have a gradual memory loss and difficulties with language and emotions. As the disease advances, the person may need help in all aspects of life: bathing, eating, and using the restroom. Sometimes people with Alzheimer's disease do not recognize friends or family members. There is currently no cure.
artificial joints	A man-made replacement for a joint. Artificial joints can be made from stainless steel, titanium, chrome, cobalt alloys, plastic, or ceramic. Some artificial joints are built so that the bone grows into and around them; others are attached to bones with screws or metal pins. Doctors have learned to replace diseased or injured finger joints, hips, shoulders, and knees with effective, man-made spares.
artificial limbs	A man-made replacement for an arm, leg, hand, foot, eye, or other body part. Artificial limbs can be made from willow wood, fiberglass, plastics, glass, or metal. Artificial limbs are also called prosthetic devices. As limbs and joints age and wear out or are damaged by disease, many seniors face replacement surgeries.
arthritis	Arthritis is a group of more than 100 diseases and other conditions that can cause pain, stiffness, and swelling in the joints.
GRUPPO 2	
assisted living	A special combination of a place to live, services, and health care for people who need help with daily living activities.

assistive technology	Technology that helps people do tasks or activities that might be difficult or impossible for them without help. This might include technology like computer programs, robotic devices, or household items that can communicate with caregivers.
biomechanics	Applying the laws of mechanics to better understand human movement, improve performance, and prevent injuries. Mechanical engineering, electrical engineering, gait analysis, neurophysiology, and computer science are all used in biomechanics.
biomedical engineering	Biomedical Engineers study biology and medicine to develop new tools and machines for health care. They develop medical diagnostic machines, medical instruments, artificial organs, joint replacement parts, and prosthetic devices.
cataract	A cataract is a cloudy mass of protein on the lens within the eye. Cataracts can grow larger, making it hard to see. If the cataract worsens, surgery may be necessary to remove the cloudy lens and replace it with a new lens.
GRUPPO 3	
chemist	A scientist who studies how things called elements change when they are heated, cooled, or mixed with something else. All living and nonliving things are made up of elements. There are more than 100 elements. They include things like gold, carbon, iron, and oxygen.
clinic	A place where people who don't need to stay in a hospital can go to get medical help.
cognitive function	A person's ability to process thoughts and ideas. It can involve noticing things around you, thinking, and remembering. Often a change in a person's cognitive function is the first sign of other problems like dementia.
convalescent home	See nursing home.
dementia	The progressive loss of intellectual abilities is called dementia. It may be caused by a variety of diseases or conditions. As dementia advances, the person may need help in all aspects of life: bathing, eating, and using the restroom. There is currently no cure.
GRUPPO 4	
diabetes	A disease that affects the way people use digested food for energy and growth. Most of what people eat is broken down into glucose. Glucose is a form of sugar in the blood—it is the principal source of fuel for our bodies.
diagnostic machines	Machines, like microscopes and X-ray machines, that help with studying sick and hurt people so that doctors can figure out what is wrong. See also machine. doctor Someone who has been trained to heal sick and injured people; a physician or surgeon.
elder	An older person.
engineer	Someone who uses science to create new things that people can use. Engineers create things like bridges, roads, computers, telescopes, tractors, airplanes, medical machines and tools, test instruments, and many others.
Farsightedness / presbyopia	Farsightedness, or presbyopia, occurs in all humans as they age and the lens of the eye becomes thinner and less able to focus on objects nearby. Most people begin to experience this by age 40. While glasses can help, they do not fix farsightedness completely.
GRUPPO 5	
finance	The system that includes money, credit, investments, and banks.

geriatrics	The medical study of the problems and diseases of old age and aging people.
geriatrician or geriatric physician	A doctor who specializes in the care of seniors and the unique health needs that come from aging.
gerontology	The scientific study of aging. Geriatrics (the care of seniors) differs from gerontology; gerontology is the study of the aging process itself.
glaucoma	Swelling inside the eyeball that causes damage to the eye and can lead to blindness.
gout	A disease that causes painful swelling of the ligaments and other tissue around the joints.

#### GRUPPO 6

government agency	A group of people appointed by a unit of government to direct affairs and enforce regulations.
hip	A joint that connects the leg to the body. Hip replacement surgery removes damaged or diseased parts of a hip joint and replaces them with new, man-made parts.
hospice	A special type of medical care that focuses on dignity and comfort during the final months of life.
hospital	A place where doctors, nurses, and others take care of people who are sick or hurt.
inhaler	A medical tool that helps people breathe in their medicine. Most inhalers are small enough that they can be carried in a pocket. Sometimes, they are called puffers.

#### GRUPPO 7

laboratory	A room or building where people study science or perform tests and analyze the test results.
mathematician	An expert in any of the group of sciences that use numbers and symbols to study amounts and forms.
medicine	The science of treating or preventing disease. Medicine is also a name for things that people or animals drink, swallow, chew, breathe in, rub or spray on their skin, or get in a shot to help kill germs, take away pain, or keep them from getting sick.
mobility	The ability to move around on your own, including walking, running, jumping, and swimming. Also known as locomotion. Motility is the biological term for the ability to move spontaneously and actively.
motor skills	A learned sequence of movements that work together to allow smooth, efficient action. Motor skills are required for walking, talking, typing, cooking, playing, dancing, driving, and many other tasks. Motor skills decline in all adults as they age due to decreased strength and diseases like arthritis. Even small movements can become difficult and sometimes painful.

#### GRUPPO 8

neurophysiology	The study of the nervous system by recording the body's electrical activity.
nursing home	A place where 24-hour care is provided for people who are sick or hurt and cannot live on their own.
nutritionist	Someone who studies the process by which a person, animal, or plant takes in food and uses it for living and growth.

pension	An arrangement to provide people with an income when they no longer earn a regular income from employment.
Pet-therapy animal assisted therapy	is a type of therapy that involves animals as a form of treatment. The goal of AAT is to improve a patient's social, emotional, or cognitive functioning.
physicist	A scientist who studies the way things move and the way work is done. Physicists study light, heat, energy, sound, electricity, and mechanics.
GRUPPO 9	
programmer	A person who writes the instructions for a computer to follow.
prosthetic	See artificial limbs and artificial joints
retirement	The point where a person stops working completely, usually because of reaching a specific age. A person may also semi-retire by reducing work hours. Germany was the first country to introduce retirement in the 1880s. Before then, most workers continued to work until they died.
safe	Free from harm or danger.
scientist	A person who watches (observes) and experiments to learn about things that exist in the world.

GRUPPO 11	
stroke	A stroke or "brain attack" happens when a blood clot blocks a blood vessel that carries blood from the heart to the body. A stroke also can happen when a blood vessel breaks and stops blood flow to an area of the brain. When either of these things happen, brain cells begin to die and brain damage occurs.
surgery	A way of helping sick or hurt people by cutting into, taking out, or repairing body parts.
technician	A person who has skill in a way of using tools, instruments, or materials and following rules in carrying out experiments, processes, or tests.
walker	A framework with wheels or gliders and handgrips that can be used by seniors and others who have difficulty walking.

## Una possibile soluzione per l'anziano:

A noi piacciono molto gli animali, perciò abbiamo pensato di coniugare la Pet - teraphy con la robotica costruendo un robot a forma di cane.

La Pet teraphy è ( da wikipedia) definita come "Con il termine **pet therapy** s'intende, generalmente, una terapia *dolce*, basata sull'interazione [uomo-animale](#).

*Si tratta di una terapia che integra, rafforza e coadiuva le tradizionali terapie e può essere impiegata su pazienti affetti da differenti patologie con obiettivi di miglioramento comportamentale, fisico, cognitivo, psicosociale e psicologico-emotivo.*

La pet therapy non è quindi una terapia a sé stante, ma una co-terapia che affianca una terapia tradizionale in corso. Lo scopo di queste co-terapie è quello di facilitare l'approccio medico e terapeutico delle varie figure mediche e riabilitative soprattutto nei casi in cui il paziente non dimostra collaborazione spontanea. La presenza di un animale permette in molti casi di consolidare un rapporto emotivo con il paziente e, tramite questo rapporto, stabilire sia un canale di comunicazione paziente-animale-medico sia stimolare la partecipazione attiva del paziente."

Il cane dovrebbe possedere una pelle sensibile al tocco dell'umano costituita da tanti sensori tattili e saper interpretare gli stati d'animo dell'uomo e quindi essere in grado di fare le facce sorridente, triste, preoccupato.

Il robot-cane potrebbe anche essere dotato di dispositivo bluetooth per permettere la comunicazione con i parenti dell'anziano, un pulsante di emergenza perché l'anziano potrebbe aver bisogno di chiamare i parenti. Dovrebbe essere libero di girare all'interno della casa dell'anziano e quindi dovrebbe avere una memoria che gli permetta di mappare la pianta della casa.

Abbiamo pensato che la sua forma estetica debba essere gradevole, e le sue dimensioni adeguate alla casa dell'anziano.

Abbiamo costruito un modello come si può vedere nelle foto allegate:



